

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

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DIESEL RAILWAY TRACTION SUPPLEMENT

The May issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

End of the German War

LATE on Monday evening it was announced that Germany had surrendered unconditionally to the Allied Forces and that the much publicised VE and VE+1 Days would be observed as public holidays on Tuesday and Wednesday. This accounts for the late appearance of our paper this week. But the VE days brought no relaxation to the railways and other transport services. For railwaymen there was no holiday. Nor was it expected. Railways are essential in peace, essential in war, and essential on victory days. Those of us who remembered the spontaneous celebration of Armistice Day in 1918 and compare it with the VE days of this week must be struck by the absence of "planning" then compared with this week. It is a sign of the times—good or bad according to one's point of view.

The Central Argentine Railway Chairmanship

The decision by Mr. W. Howard-Williams to relinquish the Chairmanship of the Central Argentine Railway Limited will not result in the loss of his active participation in Argentine railway affairs, for he is to remain on the board. His desire to vacate the Chairmanship has been actuated by the belief that the time has come for a younger man to assume the responsibilities of that post. About a year ago, when we were dealing with the general subject of age limits for railway directors, we pointed out that a retiring age of 65 would entail the early loss to the Central Argentine Railway of Mr. W. Howard-Williams, and that this would be regrettable in view of the unsettled state of Anglo-Argentine Railway affairs. Probably Mr. Howard-Williams feels that the end of the war in Europe marks a stage; that it is a suitable opportunity for handing over to a successor, who also has had considerable experience of Argentine railway matters, and whose tenure of office reasonably might be expected to cover the post-war transitional period, the re-settlement of Argentine railway affairs when a decision is taken on the impending renewal or abrogation of the Mitre Law concessions, and any consequential adjustments which may then be necessary. Lord Forbes, who succeeds Mr. Howard-Williams, has had the advantage of recent contact with the Argentine authorities; he was a member of the mission of directors headed by Sir Montague Eddy, which went to Buenos Aires rather more than a year ago.

Canadian National Railways Report

The annual report of the Canadian National Railway system for the year ended December 31, 1944, is reviewed as to its railway operating and financial details elsewhere in this issue. The C.N.R. is to be congratulated on presenting its achievements in so attractive a form to its stockholders, for the report is excellently produced on art paper and freely illustrated with reproductions of photographs which provide an artistic background for the accounts, tabulated statistics, charts and other factual features of the publication. A page of illustrations of Canadian National hotels gives a vivid impression of their size and imposing styles of architecture. Canada's war effort is emphasised by illustrations of the hospital ship *Lady Nelson*, formerly the flagship of Canadian National (West Indies) Steamships. Other Canadian ships shown are anti-aircraft and combined-operations cruisers and the Canadian National steamship *Lady Rodney*, now serving as an army transport. On the technical side there are some pictures of traffic control towers and of munition and armament work in Canadian National workshops.

Argentine Railways Peso Exchange Rate

It will be recalled that on November 3 last a Decree was issued in Buenos Aires, under which the British-owned Argentine railways were granted an exchange rate of 14.15 pesos to the £ for financial remittances and of 14 pesos to the £ for the purchase of materials. The previous rates for financial remittances had been 16.15 and for material purposes 15 pesos to the £. In our November 17 issue we recorded that a communique issued by the Argentine Ministry of Finance had stated that by virtue of the negotiations which the privately-owned railways had carried out, to obtain more favourable exchange rates for their remittances abroad, the Government had decided to establish the foregoing temporary selling rates. We are now informed by Mr. C. Ellison Rich, Secretary of the Buenos Ayres & Pacific Railway Co. Ltd., that the difference between the new and the 16.15 peso rate is applicable solely for the purpose of financing the repayment of wage retentions and that the companies, in practice, receive no advantage in the way of remittance rate. When the change in the rate of exchange was made last year, we adopted a figure of 15 pesos to the £ and the conversion of Argentine pesos in traffic

receipts and similar statistics. This figure was recognised to be approximate only, but it was felt that it would give a broad indication of the trend of receipts, and would allow for incidental expenses of conversion. In view of the information received from Mr. Ellison Rich, we propose to revert, for conversion purposes, to the rate of 16 pesos to the £. Elsewhere in this issue is a letter from Mr. C. Ellison Rich dealing with this subject.

Overseas Railway Traffics

As a sequel to the admission of Argentina to a seat at the San Francisco Conference there has been some improvement in the prices of stocks of British-owned railways in Argentina particularly in debenture issues. Although the Central Argentine has a decrease of £17,891 for the 43rd week of the current year following a substantial drop in the previous week, and there is only the small increase of £812 on the Buenos Ayres Western, the traffics of the two other major railways for the week have been good. The Entre Rios shows an advance of £3,081 for the week, but the Argentine North Eastern has broken into its steady series of increases by a decrease of £1,075. On the Antofagasta the aggregate earnings of £517,650 for the first 17 weeks of 1945 show an improvement of £36,770, and the Nitrate Railways by an advance of £5,871 in the last fortnight of April have reduced their aggregate decrease to £11,358. The Leopoldina in its 17th week shows a decrease of £9,284 and its aggregate for 1945 is now £9,132 down. To date the Great Western of Brazil shows an aggregate increase of £60,200, with gross receipts of £456,800.

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific*	43rd	149,375	+14,687	5,895,875	+1,023,625
Buenos Ayres Great Southern*	43rd	210,875	+36,500	9,067,500	+899,625
Buenos Ayres Western*	43rd	67,937	+812	3,051,188	+480,251
Central Argentine*	43rd	175,328	-17,891	7,786,715	+862,328
Canadian Pacific	17th	1,742,600	+187,000	20,006,500	-133,800

* Pesos converted at 16 to £

Aggregate gross earnings of the Canadian Pacific Railway for the first quarter of 1945 were £14,726,400, a decrease of £243,200, in comparison with the first quarter of 1944, and the aggregate net earnings of £1,203,400 for the same period showed a fall of £750,000.

Canadian Pacific Prospects

At the annual general meeting of the Canadian Pacific Railway Company on May 2, Mr. D. C. Coleman, Chairman & President, said that there was small justification for the hope that the net earnings for 1945 would show any improvement notwithstanding that the working expenses for 1944 were burdened with a retroactive wage payment applicable to the year previous. In explanation of this view, he said it would appear that, now that the end of the war in Europe was in sight, the high point of wartime freight traffic had been passed. A temporary decline in all types of traffic could therefore be expected, with the exception perhaps of agricultural food products, until the economy of the country had been readjusted. On the other hand, the prospects for passenger traffic during the balance of the year seemed to be very favourable. While the gross earnings in 1944 were the highest in the company's history, net earnings were lower than in many years of normal operations. Labour unit costs had increased approximately 25 per cent., the cost of steel rails 23 per cent., sleepers 90 per cent., the price of coal 35 per cent., and so on, while the charges of the railway companies for services had in general remained stationary. It was calculated that the increases in labour and material costs since the commencement of the war added approximately \$43 millions to the operating expenses of the Canadian Pacific for the year 1944. If labour and material costs were to be maintained at anything like the present level, justice would require that the railways be permitted to obtain such increases in rates as the Board of Transport Commissioners might find reasonable.

Publication of Railway Accounts

The Public Utility Undertakings (Prevention of Publication) Order, 1944 (S.R. & O., 1944, No. 1449) which came into force on February 1, 1945, removes the restrictions and suspensions operative under the Orders and Directions relative to publication of accounts, etc., of certain classes of transport services. Inland navigation, and dock, harbour, pier or lighthouse undertakings are now specifically relieved from these restrictions (subject to notice of re-imposition by the Minister of War Transport) and the provisional accounts of the Grand Union Canal Company for 1944, to which we have already alluded, have been released for publication. The official explanatory note prefacing the Order states that it removes the restrictions provided by the Orders and Directions in relation to all the other undertakings to which they applied except those with respect to which the Minister gives notice

to the undertakers as provided by the Order, and in their case the restrictions have been modified. This method of continuing the restrictions to a modified extent, in cases where such continuation is required for reasons of security, has been adopted instead of specifying the undertakings in the Order. Section 1 of the Order states that "The Orders and Directions of the Minister specified in the Schedule to the Order shall cease to have effect in relation to any undertaking which is not an undertaking to which this Order applies." This section and the memorandum appear to indicate that the full accounts and statistics of the four main-line railways for 1944 were, for security reasons, not available for publication, but that those for 1945 are likely to appear in due course.

The V2 Attacks and the Railways

Although the V2 rocket attacks on this country from September 8, 1944, to March 27, 1945, did not leave the railways unscathed, the results achieved by this weapon were small compared with the blitz bombing of 1940-41, and the flying bomb attacks of last year. This was partly because of the smaller number of V2s compared with the intensive attack of V1s, and also because V2 damage tended to be more localised in its intensity, without the widespread blast effects. Traffic and engineering staffs, well versed in effecting speedy repairs and restoring traffic to normal, were quickly able to cope with the incidents which did occur, and which generally called for no other action than the clearance of debris from the line and first aid repairs to bomb damaged structures. In contrast with the flying bombs (which affected principally though by no means exclusively) the Southern Railway, the L.N.E.R. was the principal railway sufferer with the V2s, by reason of its geographical position, as the rockets apparently were discharged mainly from Holland. London was the target of the rockets as it was of the flying bombs. On their way to London, rockets caused considerable damage by falling short, especially in Essex, Hertfordshire, and Kent. The total number of rockets reaching this country during that period was 1,050. Nearly one in seven (149 in all) caused damage to L.N.E.R. property. Some further details are given at page 477.

Central Entrances for Buses

The recently-issued interim report of the Committee on Road Safety stated that the attention of the committee had been called to the greater safety which could be secured for public service vehicle passengers by the adoption of a body construction incorporating a central entrance coupled with sliding doors. The particular vehicles in mind are equipped with pneumatically-operated sliding doors in the middle of the vehicle on the near side. The seating capacity of the buses is 48 (25 on the upper deck and 23 on the lower) and access to the upper deck is gained by a staircase leading from the centre of the platform on the lower deck. The committee was informed that, in one particular area, step accidents were in the ratio of 1 to every 28,874 miles run, or 1 to every 212,734 passengers carried. For the year ended March, 1944, after the sliding door type of vehicle had been adopted, this ratio was reduced to one step accident to every 80,030 miles run, or one to every 941,174 passengers carried. The committee added that such good results might not be achieved generally, and that buses of this type might not be suitable for use in congested areas. It may be recalled that the transport general managers of Sheffield, Leeds, and Manchester, each had a bus of this type on loan recently from Blackpool Corporation, for experimental use at the instance of the Road Safety Committee of the Ministry of Transport. These general managers in a joint report have now emphasised various disadvantages experienced when operating central-entrance buses with sliding doors on heavy industrial services.

London Transport Unofficial Strikes

The announcement of the summer schedules by the London Passenger Transport Board last week was made the occasion for unofficial strikes by a number of the Board's surface services. These stoppages of work were unauthorised by the men's union, which urged the strikers to return to work pending settlement of matters in dispute. The ostensible reason for the strike was that the schedules could not be properly worked because of an insufficiency of transport and labour. Lord Ashfield assured them that additional labour was available and said that the Board, with the assistance of the Government Departments concerned, had secured a sufficient supply of labour to cover the needs. As might be expected, the action of the men was the subject of criticism in several sections of the press, and there can be no doubt that their ill-considered action not only caused considerable inconvenience to the public, but was prejudicial to the best interests of the men themselves. During the periods of heavy air attack on London, their conduct and bearing was exemplary, and they won well-merited approbation for the manner in which,

In very difficult times, they served the London public. It is all the more to be deplored, therefore, that the less responsible elements among them should have brought about an action which cannot fail to have undermined public goodwill.

A Derailment at Wood Green

Lt.-Colonel E. Woodhouse, in his report on the derailment at Wood Green, L.N.E.R., on August 29, 1944, places the responsibility on the driver, who ran from the No. 2 slow line to the Enfield branch, which forms a fly-over across the main lines, at a rate considerably in excess of the prescribed speed limit of 15 m.p.h., a restriction of which he was unaware. The man was trapped in his cab when his engine overturned and so badly scalded that he was six months under hospital treatment. Colonel Woodhouse was unable to interview him until March 8. Four passengers and the fireman were injured. The layout at the spot is rather awkward as the conditions are somewhat cramped, and both Colonel Woodhouse and Mr. T. H. Seaton, Assistant Engineer (London) have made suggestions for improving it, which is considered generally desirable in view of the fact that the Enfield line is no longer a branch, as ordinarily understood. It has been an alternative main route from Wood Green to Stevenage since 1924. It is interesting to note from the report, summarised elsewhere in this issue, that powers to make a burrowing junction in place of the present fly-over were obtained by the G.N.R. in 1914 and that various Acts and Orders have extended their period of validity to October, 1946.

The First Locomotive Built in Portugal

Hitherto the Portuguese railways have obtained their locomotives from foreign manufacturers, principally in Germany and Switzerland. Breaking with this practice, the Portuguese Railway Company recently put into service the first locomotive to be constructed in Portugal. The engine was built in the company's workshops at Madre de Deus, under the direction of Senhor P. F. Adeodato de Brion, the Chief Mechanical Engineer. For this initial effort the company selected a tank engine of a class supplied originally between 1917 and 1921 by the Swiss Locomotive & Machine Works at Winterthur; a further delivery came from Henschel of Cassel in 1929. The new locomotive is used chiefly for hauling passenger stopping trains. For some time there has been considerable difficulty in obtaining supplies from abroad, not only of completed locomotives but also of material for shop repairs and maintenance work. The Minister of Public Works, Senhor Cancela de Abreu, with numerous State and railway officers, presided at the dedication ceremony and congratulated the company on the step it had taken.

Canadian National Railways

OPERATING revenues of the Canadian National Railways for the year 1944 amounted to \$441,147,000, an increase of \$532,000 over 1943 and the highest in the company's history. Total revenues averaged \$1,205,000 per day throughout the year. The system carried 80,851,000 tons of freight and 35,928,000 passengers, almost twice as much freight and four times as many passengers as in 1939. There was an increase of 424,000 tons in the 1944 freight traffic, as compared with 1943, but freight revenue at \$321,589,000 was down by \$3,310,000, because of the decreased movement of higher rated war and industrial materials and an increased volume of lower rated products. Passenger revenue, at \$69,776,000 showed an increase of \$2,885,000. Apart from minor adjustments, freight and passenger rates remained fixed at pre-war levels.

Operating expenses totalled \$362,547,000, an advance of \$38,072,000 on the 1943 figure. The increase over the preceding year in operating expenses was caused by higher wage rates amounting to \$23,348,000, an increase of \$7,102,000 in the price of materials, and additional maintenance work on track and equipment costing \$5,893,000.

The higher costs for wages and materials did not represent additional man-hours or additional quantities of material, but resulted from the higher wage rates paid by the railway for labour and the increased prices paid for fuel, rails, sleepers, and other materials. The average price of fuel increased from \$5.37 to \$6.10 per ton, involving an added expense of \$4,906,000. New rails averaged \$57.33 per ton, compared with \$55.26; the average price of treated sleepers rose from \$1.42 to \$1.65 and untreated sleepers from 88 cents to \$1.04. As compared with 1939, higher rates added \$47,823,000 to the wages bill and higher prices added approximately \$20,000,000 to the cost of materials.

Operating expenses included \$10,000,000 for deferred maintenance, \$1,140,000 for amortisation of war projects and \$2,375,000 for inventory reserve. The amount charged for depreciation on rolling stock was \$19,853,000, or approximately \$7,000,000 more than would be provided under average traffic conditions. After meeting operating expenses, taxes, equipment and joint facility rents the net railway operating income was \$67,725,000 as compared with \$81,634,000 in 1943. Interest on funded debt held by the public in 1944 was \$28,136,000, interest on government loans \$19,934,000 and after meeting these charges the cash surplus paid to the government was \$23,027,000. The cash surplus in 1943 was \$35,639,000. Financial results are compared below:—

	1943	1944
	\$	\$
Freight revenue	324,899,724	321,588,729
Passenger revenue	66,891,034	69,776,257
Total operating revenues	440,615,854	441,147,510
Total operating expenses	324,475,669	362,547,043
Net operating revenue	116,140,285	78,600,466
Net railway operating income	81,633,938	67,724,644
Net income	91,548,501	88,246,826
Deductions from income	6,246,045	7,150,262
Net income available for interest	85,302,456	71,096,564
Interest charges	49,663,044	48,069,639
Cash surplus	35,639,412	23,026,924

The total capital expenditure during the year was \$36,063,000, of which \$32,359,000 was for new equipment, including 27 locomotives acquired under hire-purchase agreements with the Dominion government. Construction proceeded on a new line from Eastern Junction to Bout de l'Ile on the Island of Montreal and is nearing completion. The line will be ready for operation this summer. A two-mile line from Atwater Avenue to the west end of Victoria Bridge, Montreal, was completed.

War activities of the National System in 1944 included the operation of the Prince Rupert Dock & Shipyard and of National Railways Munitions Limited. These, as well as the company's shops, were meeting their war contract schedules. Shipments handled by the Canadian National Express aggregated 15,781,000, an increase of 7.55 per cent. over 1943. Express revenues, at \$17,375,000, were the highest in the company's history. Revenues from Canadian National Telegraphs amounted to \$6,998,000, on a level with 1943. The combined revenues of the railway's hotels amounted to \$5,639,000, the highest on record. The three resort hotels, Jasper Park Lodge, Minaki Lodge, and Pictou Lodge, remained closed. Meals served on the company's dining cars totalled 904,000, more than five times the number served in 1939.

Locomotive Running Sheds

THOSE who heard Mr. J. Taylor Thompson present his paper on "The Layout of Locomotive Depot Facilities" at the Institution of Civil Engineers on March 6, may well have drawn mental comparisons between the carefully planned models which he illustrated in plan in the folding plate attached to the pre-print and the decidedly primitive examples, only too familiar in this country at any rate, which may be said to constitute the average accommodation provided by a railway company for its locomotives. It is one thing to be taken on a conducted tour of the show pieces; it is quite another to be obliged to earn one's living, as railway servants do, by grappling with the difficulties inseparable from antiquated and outmoded equipment. Running sheds seventy years old, or more, are all too common, and almost invariably bear witness to the fact that they were built when time was a matter of comparatively little consequence to the engine off duty.

Nowadays, the capital invested in locomotives is so great that it has become increasingly important that they should spend as much of their time as possible in gaining revenue for their owners, and as little as possible in the shed; and this changed situation—with a further urgency superimposed by war conditions—is an influence which cannot possibly be ignored in the general arrangement of running shed facilities. It is no good concentrating on one aspect alone, if other relevant factors are not taken into consideration. As Mr. Thompson states: "In dealing with a locomotive depot the ultimate aim is the servicing of locomotives so that they shall be available for use as quickly as possible, and not the rapid or economical fulfilment of one particular operation. Unless the purpose, as a whole, is kept in mind, wasteful expenditure on unbalanced facilities is almost sure to arise." The film which was shown at the meeting illustrated how rapidly this could be done.

With the grouping of the railways in 1923, it became a notable feature of the policy in the locomotive running departments to

close as many of the comparatively small sheds as possible, and to concentrate all locomotive servicing at a few centrally placed depots. Moreover, the grouping had the effect in certain instances of bringing a considerable increase in traffic to particular areas. Consequently one of the first effects to be felt in the running sheds that remained was a gross overcrowding, and far too little was done to ease the problem. It needs little imagination to picture the effects of increasing the number of engines attached to a particular shed from, say, 75 to 120, if nothing particular is done to improve coaling, watering, sanding, and ash disposal facilities, to say nothing of general equipment for locomotive maintenance. As long as the present type of locomotive exists—and may it long flourish, as it deserves to do—pits will be necessary in workshops and sheds. If the number of engines at a given shed is increased, the pit accommodation must be increased proportionately, otherwise there will be delays in repairs and inspection which no other means will remedy. This is merely one example of the complex inter-relationship of the many factors controlling the efficient maintenance of locomotives. Mr. Thompson made much of another factor—ash disposal—in his paper, and rightly so, for it has been mismanaged lamentably in the past, at the cost of an expenditure in human effort which is truly appalling to contemplate. We can recall a depot housing over 200 engines, the ashes from which were shovelled (with ordinary hand shovels) by a gang of men working at rail level into 12-ton wagons placed alongside the engine road—each shovelful of ash had thus to be swung some 8 or 9 ft. into the air, and on windy days much of the ash never got into the wagons.

Mr. Thompson's model layouts of running sheds include both the roundhouse and the straight-through types. His example of the former pattern shows how the old objection to the roundhouse (namely, that a failure of the turntable "bottled up" all the engines around it) can be overcome. Our own feelings are that, with this very substantial improvement, the roundhouse is much to be preferred. The everlasting draughtiness of straight-through sheds is very trying to those who work in them, and is bound to have a generally adverse effect on the work done. A further advantage in the roundhouse type is that turntable capacity is always in proper proportion to the number of engines, and in consequence much of the delay experienced where the turntable is a separate entity is avoided.

U.S.A. Railways in 1944

THE annual statistical and outlook number of the *Railway Age* was published on January 6 but did not reach London until the second week in March. We always look forward to the arrival of this special issue, because it gives a comprehensive survey of every branch of American railway transactions during the previous twelve months and discusses the probable trend of developments in the near future. In the first of a series of signed articles, Colonel J. Monroe Johnson, Director of the Office of Defense Transportation, offers his felicitations to railwaymen for "a great job magnificently done," but goes on to say that the current year is likely to be the toughest of all. He lays stress on the movement of supplies, especially petroleum products, to the west coast now that the Pacific war has entered its vital stage at the same time as the European conflict has been intensified. Colonel Johnson does not expect much help from other transport agencies and his opinion is confirmed by the index for freight ton-miles quoted below:—

	1939	1943	1944
Railways	100	218	222
Waterways (Great Lakes, rivers and canals)	100	145	140
Road-motor vehicles	100	114	109
Pipelines	100	166	182

Over the same period the railway proportion of the total inter-city freight traffic has increased from 62 per cent. in 1939 to 71 per cent. in 1943 and 1944. Last year the railways broke all previous records by handling 740,000 million ton-miles compared with 447,000 million in the peacetime peak year of 1929. This great work was done while the railways were handling 96,000 million passenger-miles, more than twice the figure for the previous "banner" year of 1920 and over four times the 1939 passenger mileage.

These facts are culled from the review of 1944 railway operations contributed to the annual by Dr. Julius H. Parmelee, Director, Bureau of Railway Economics, Association of American Railroads. This survey of an *annus mirabilis* in railway history is written in a clear and judicial style, every statement being supported by adequate statistics. Dr. Parmelee

points out that the volume of freight traffic showed increases in each month through June in 1944 and then turned downward for the rest of the year. Passenger miles also showed a tendency to level off during the second half of 1944. After appraising all the complex elements that enter into the prospective situation, it appears to the Director reasonably certain that railway freight and passenger traffic will be less in 1945 than in 1944, but the specific percentages of decrease for the current year still lie in a rather speculative field.

This forecast does not conflict with Colonel Monroe Johnson's warning, because the Director of O.D.T. knows the mounting difficulties of the railways in respect of overstressed equipment, scarcity of tank wagons and of some other types of vehicles, and diminishing manpower. One article in the annual shows that the locomotive stock is being gradually impaired through intense user and few new additions. A second article, bearing the significant title "Freight Car Inventory Ageing," calculates that at the end of December the backlog of orders for new wagons stood at 40,000, slightly more than the number of wagons on order and undelivered at the end of 1943. About one-third of the freight wagons now in traffic are over 25 years old and the number of wagons under or awaiting repairs increased by 5,000 in October last as compared with the corresponding month of 1942, though by great efforts it was kept at the low level of 3 per cent. of the total wagon stock. Our railways would be more than satisfied if they could achieve an equally good result, we feel sure.

Dr. Parmelee's statistical tables, based on the short ton, provide plenty of evidence of operating efficiency. The average number of gross ton-miles per freight train hour in 1944 was greater than in 1939 by 14 per cent. Net ton-miles per train hour were up over the same period by 32 per cent., reflecting an increase in train load from 813 to 1,144 tons and in wagon load from 27 to 33 tons. Other striking average figures are a daily mileage of 124 for freight locomotives and 53 for wagons. Because of heavy traffic density a freight-train speed of nearly 16 miles an hour was a mile an hour below the pre-war result. In contrast to the general slowing down of passenger trains in Great Britain, the average speed of American services scarcely has been affected at all, though the average train load has risen from 58 passengers to 203 and the coach-load from 13 passengers to 33. The daily mileage of passenger locomotives during the five years we are comparing rose by 21 per cent. to the unprecedented height of 222 miles and for every ton of fuel consumed by these engines 136 coach miles were worked—another best on record.

For conducting all the transport we have recorded the railways collected a revenue of nearly 9,500 million dollars, an increase of 400 million dollars over 1943 or more than 4 per cent. Operating expenses, however, increased by 650 million dollars, or 11 per cent., to 6,333 millions and the operating ratio of 62.5 per cent. in 1943 rose to 66.7 per cent. last year. In consequence net operating income declined from 1,362 million dollars in 1943 to 1,095 million in 1944 and net income (after fixed charges) fell from 874 million dollars to 696 million. In both years the railways paid about 216 million dollars in dividends whereas stockholders received 490 million in dividends in 1929. Obviously the American railways are following a conservative financial policy in view of the heavy after-war expenditures which will be essential to bring their properties up to date. Their attitude may be illustrated by the comparison which the *Railway Age* draws between the disposition of total receipts (operating revenues plus other income) in the years 1929 and 1944.

	1929	1944
	Per cent.	Per cent.
Surplus	6.1	5
Dividends	7.4	2.2
Fixed charges	10.4	6.3
Rentals	1.9	2.1
Taxes	6	18.5
Wages	40.3	37.8
Other expenses	27.6	28.1
Total receipts	100.0	100.0

In 1944 total receipts were 3,058 million dollars larger than in 1929, or 46 per cent., but the railways paid the owners of their securities 353 million dollars less, a 30 per cent. decrease. Of late the selling price of railway securities has somewhat improved, but the financial position as a whole is still too weak to encourage investors to provide new capital freely for the betterment of railway properties.

America may be on the brink of an era of violent competition in the transport field. That road, air, water and pipelines will all strive to divert traffic from rail goes without saying, but

great rivalry is likely within one or two of these transport agencies, notably civil aviation, and in some quarters a clamour is being raised against the long-established practice of the railways to settle rates and facilities in consultation. The railways will thus have every incentive to spend money on improving the efficiency and attractiveness of their services as soon as the war ends, before their rivals are fully equipped for the fray, and when the time comes they promise to have at least 1,000 million dollars of cash in hand to pay for new works and equipment. Only by adopting a progressive policy, can the railways hope to hold their own in the coming contest and it is reassuring to learn that their after-war planning programme is "now on home stretch."

In a brightly written editorial the *Railway Age* claims that the railways have always demonstrated resourcefulness and vitality, when subjected to the hardest tests, and regards with optimism the future of the industry. We share our contemporary's faith and admire its enterprise in analysing the 1944 performance of the U.S.A. railways and publishing what is really a book packed with admirably arranged information before 1945 was a week old.

....

Carriage Axle Design and Performance

WITH Mr. Graff-Baker, Chief Mechanical Engineer of the L.P.T.B. as President, the Institution of Locomotive Engineers has provided a "London Transport" flavour to three of this session's meetings. Mr. Graff-Baker himself gave a lead with a notable Presidential Address; on February 22, one of his staff, Mr. Collins, gave a paper on "Power-Operated Doors for Railway Rolling Stock"; and now Mr. D. W. Spencer, also of Mr. Graff-Baker's staff, on April 4, has given a paper entitled "Notes on Axle Design and Performance." This little group of specialist lectures on features of London Transport engineering practice might well be extended to cover other important aspects of the subject, so that within a single session the salient characteristics of the railway could be covered by members of the staff well qualified to deal with them, and the Presidential Address would form both an introduction and a summing-up of present tendencies, linking each of the various features together and enabling them to be viewed in proper perspective.

Mr. Spencer's paper formed a useful survey of the various influences affecting the design of railway axles; and our only adverse criticism is that the title he gave it did not indicate that it was confined to carriage axles alone. As was pointed out by Mr. T. Henry Turner, in the ensuing discussion, wagon axles and locomotive axles each have to be treated in entirely different manners, the former largely because of the different method of lubrication and the latter because of the complex system of stresses set up by the reciprocating parts of the locomotive.

Although the failure of a carriage axle in service is of comparatively rare occurrence, it is so desirable to avoid it that every possible means of preventing or reducing its incidence is of vital importance. As most failures occur in the region of the wheel seat, usually a short distance inside the hub, research has generally been directed towards the elimination of the tendency for fatigue cracks to develop in this region.

Two main lines of attack have been directed towards the fulfilment of this aim: they comprise, first, photo-elastic studies, after the manner of the methods expounded so brilliantly in this country by Professor Coker and Professor Filon at University College, London; and second, series of physical tests. The chief methods of reducing the sources of weakness and of improving the strength of axles at the press-fitted portions include the provision of annular stress-relieving grooves on the inside hub of the wheel, raised seats at the press-fitted portions, and surface-rolling of the wheel seats.

Mr. Spencer cited a research carried out by the Timken Roller Bearing Company into stress concentrations due to the press-fit, using photo-elastic apparatus. The chief fact emerging from these tests is the improvement obtained by grooving the inside hub face, stress relief being secured by the flexibility of the lip on the hub, which prevent the building-up of high stresses at this point. In mechanical engineering, as in everything else, one cannot get something for nothing, and the author quite fairly points out that the "theoretical considerations" on which some of the advantages of annular stress-relieving grooves seem to have been based, are offset by the increased "bell-mouthing" or enlargement of the inner end of the bore of the hub which occurs when such grooves are provided.

The paper contains a well set-out and thoroughly practical section on surface rolling of wheel seats, with just that informa-

tion which a designer needs to know. Rolling, as opposed to filing and grinding, has been definitely shown to have a beneficial effect on test specimens; and fatigue bending tests with surface-rolled specimens have yielded increases up to 30 per cent. in the endurance limit. After giving details of the workshop procedure, Mr. Spencer adds a most instructive graph showing how the hardness varies with the depth from the surface of a rolled wheel seat. As a result of their enhanced resistance to the propagation of fatigue cracks, the L.P.T.B. has put into service a fairly large number of axles having cold-rolled wheel seats.

Perhaps the most obscure of all the problems encountered in carriage axle design is the effect of the press-fit. Buckwalter, Horger, and Sanders in America have divided the problem into "three regions of stress-life combinations: in region A the axle breaks off in the wheel fit; in region B the axle develops cracks in the wheel fit which will not propagate to cause failure unless the stress is increased above a certain limit, which virtually transfers the axle into region A; in region C no cracks develop. The author, in assessing the significance of this research, concludes that in assemblies where no bending moment is taken through the wheel, the stress at which the axle will not crack is the same as the stress at which the axle will not break off. The initiation of cracks not leading to complete failure is therefore due to bending-moment stresses, so a reduction in flange forces would have the effect of raising the endurance limit.

After giving the method of designing axles and the formula attributed to Reuleaux, Mr. Spencer draws attention to the fact that if certain stress limits are to be strictly observed, axles thus designed may be undesirably heavy. He then refers to means for reducing the weight of the wheel-and-axle assembly. By using seamless steel tubing, a saving in weight of over 25 per cent. has been effected in the U.S.A.; and this method of manufacture would appear to have definite possibilities. Already in America, the Association of American Railroads has adopted axles of seamless tubing made by the Timken Roller Bearing Company as an interchange standard for all purposes. This seems to point the way to a profitable line of investigation in this country; yet another, virtually untried, would be the practicability of free wheels, in view of those design complexities and stresses which in existing patterns are solely due to the use of a press-fit.

....

Stale Sandwich Shadow

ONCE again the reproach of out-of-date refreshment rooms has been made the foundation of more general criticism of railway facilities. Writing in *The Observer* recently, Mr. Ivor Brown spoke appreciatively of railway engineering achievements, but contrasted them with what he called the "poverty" of railway psychology. This "poverty" he saw not only in the anomaly of retaining both first and third class refreshment rooms—neither of them providing service of the standard the public enjoyed in other catering establishments—but also in a supposed failure of the railways in peacetime to cater for "transport-hungry millions" at week-ends, who "wanted to see their friends on their one wholly free day."

His suggestion that these people were better catered for by the motorcoach companies overlooks the wealth of Sunday half-day excursion facilities before the war. Few provincial towns or seaside resorts were without their express half-day excursion, usually with buffet cars and a seat reservation system. These trains even gave some places better service on Sundays than they had during the week, particularly in respect of through carriages. Their speed enabled passengers to have longer at their destinations than was possible by road, assuming similar times of departure and return arrival. Certain excursions included conducted visits to places of interest at the destination, and some were specially routed to take in scenic stretches of line. Apart from week-end travel, cheap evening fares from many towns to local resorts were a widespread facility.

Refreshment rooms may have lagged behind, but to some extent it can be said it was because buffet and restaurant cars, through carriages, and convenient connections had so much reduced the demand for them. Mr. Brown recalls that Charles Dickens observed in 1866 that people abroad would often dine at railway catering establishments for preference, but Dickens was writing before the age of the cinema café, few of whose patrons today would be likely to forsake it for the most alluring railway refreshment room. If the railways cannot entirely remove the shadow of the stale sandwich from their past, it should not be allowed to prejudice judgment of their more recent ventures.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Argentine Peso Exchange Rate

The Buenos Ayres & Pacific Railway Co. Ltd.,
River Plate House, London, E.C.2. May 1
TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to the rate of exchange adopted by you in conversion of the peso traffics of Argentine railways, as shown in the traffic table published by you. A figure of 15 pesos to the £ sterling; and the Government has now granted the rail-

In the first place a rate is granted by the Argentine Government to the railways for the remittance of funds for meeting financial services. This rate until recently was 16-15 pesos to the £ sterling; and the Government has now granted the railways a reduced rate temporarily, but the difference between the new and the 16-15 peso rate is applicable solely for the purpose of financing the recent repayment of wage retentions. The companies therefore in actual practice receive no advantage in the way of remittance rate.

In the second place the rate is purely a remittance one and its use in converting the companies' gross traffics into sterling gives a completely wrong idea of the earnings. In any case, we cannot understand why a conversion rate of 15 pesos to the £ sterling has been used, as this rate is only applicable to remittances for payment for stores purchased in England.

Yours faithfully,
C. ELLISON RICH,
Secretary

[The above letter is the subject of an editorial note on p. 461.—ED. R.G.]

Rapid Repair of Locomotives

"Woodside," Sheffield Road,
Glossop, Derbyshire. May 1

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—As one somewhat intimately concerned with the manufacture and repair of locomotives, I read the article "Rapid Repair of Locomotives on the London & North Eastern Railway" published in your issue of April 13, with considerable interest. Assuming a normal working week of 47 hours, the time taken for a complete repair by the L.N.E.R. is 111 hours. I would suggest that this time could be reduced to from 45 to 70 hours excluding weighing, depending on the class of engine. To obtain this goal five important factors must be taken into account.

1. Control of staff.
2. Progressing of material.
3. Maintenance of stocks of spare parts and repaired boilers.
4. A balanced load on the shops.
5. Correct layout of the erecting shop.

1. Control of Staff

As the approximate time for all the various operations performed are known, the correct staff can easily be ascertained and allocated to their particular job.

2. Progressing of Material

It is essential that there should be a highly efficient progress system, and great care should be taken to ensure that details for repair are kept moving and not left on the shop floor; this is particularly important after they have been stripped off the engine, as delay at this stage throws the whole programme out of gear.

3. Maintenance of stocks of spare parts and repaired boilers

There must at all times be sufficient stocks of spare parts available in the stores to ensure that no locomotive under repair is at any time held up for want of them. In this connection a stock of repaired boilers should be kept on hand as a boiler cannot usually be given a heavy repair in the time available.

4. A balanced load on the shops

It is necessary that there should be some control by the works of engines coming into the shops for repair. As far as possible, approximately the same number of engines of each class should come in for repair each week, and the works must be advised at least three days before the engines are due to arrive and what repairs it is expected they will require, so that the progress organisation may allocate each engine to its particular line.

5. Correct layout of the erecting shop

The erecting shop should be laid out to suit the individual requirements of the works, as no two works are probably the same, but all identical in principle, the criteria being the number and types of engine dealt with. It should be double ended so that the engines come in one end and are stripped down and

finally pass out at the other end finished. They should be split up into different lines, roughly as follows:—

Line 1. Small engines, such as 0-6-0 tanks and 0-6-0 freight engines, of old design.

Line 2. Superheated 0-6-0 freight engines with piston valves of modern design, and 4-4-0s.

Line 3. Large tank engines together with the corresponding types of 4-6-0s and 2-8-0s (that is, 2-cylinder tanks with 2-cylinder 4-6-0s and 2-8-0s).

Line 4. Multi-cylinder engines such as 3- and 4-cylinder 4-6-2s, 2-6-2s, etc.

Line 5. Rebuilds, conversions, casualties and collisions. These engines are grouped on their own because they are not included in the schedule, as their repair may take anything from two days to several weeks.

Line 6. New engine building.

The above lines are quoted merely to give the theory behind the layout, but the allocation in practice would probably depart considerably from them. When organising the lines, care should be taken to allow for engine lengths, otherwise the system will be its own undoing. Obviously an 0-6-0 cannot be taken off its line on completion and its place taken by a 2-6-4 tank, as there would not be room for it. In practice this is sometimes forgotten or unavoidable, and engines have to wait a couple of days without any work being done on them for another engine to be moved out of the shop before there was room for it on the repair pits.

Adequate room should be provided at the side of the engines to ensure that the gangways between them are not blocked with material. In a large bay there should be at least four cranes with sufficient head room to enable one locomotive to be lifted over the top of another, so that two lifts may take place simultaneously.

From 13 to 14 hours, according to the class of engine, of the time allowed would be needed for stripping. The cleaning could be speeded up by the installation of a caustic-soda bosh of sufficient size to enable the whole engine chassis to be cleaned in one boil, thus doing away with hand cleaning. I believe that this has been done at the Federated Malay States workshops. The remainder of the time would be utilised for the repair of the engine.

I am convinced that the times I have stated are reasonable and that, with careful planning they might be reduced, but I fully realise that to layout a complete scheme and its schedules would be a very large job, a job which would, however, more than justify the time and money spent on it.

Yours faithfully,
IAN P. HUNTER

Centralised Traffic Control

The Siemens & General Electric Railway Signal Co. Ltd.
East Lane, Wembley. May 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your editor's note at the foot of the letter from "Vigilant" in your April 27 issue, there is an implication that C.T.C. has been, or would be, found on consideration not to provide the safety conditions covered by "our block telegraph regulations." This is the first time I have seen the suggestion that C.T.C. might not be acceptable in this country on account of the reduced safety it provides and it would be useful to know more particularly what the weaknesses are understood to be.

The block telegraph regulations deal chiefly with the offering and acceptance of trains between block posts. In C.T.C. this formality disappears because there is one controller only, but the regulations under which a train is signalled forward from one station to another need not be relaxed in any way.

Yours faithfully,
F. HORLEY

TRANSPORT BOARD.—The local administration committee has decided to recommend the creation of a Public Transport Board for Ceylon for the control, organisation and co-ordination of all commercial transport in the island and to advise the Minister on all questions of major policy affecting internal transport. The Board, it was agreed, should be composed of three members: the General Manager of Railways, the Commissioner of Motor Transport and another, probably the Director of Transport, who is to be the Chairman of the Board. The committee has also decided that a tribunal shall be appointed to which an appeal would lie against decisions of the Transport Board on certain specified issues to be decided later. The Board of Appeal is to consist of five members to be appointed by the Governor.

The Scrap Heap

LAST AIR RAID WARNING?

Altogether, Londoners heard the wailing of the air-raid warning 1,224 times since the beginning of the war. The last warning was on March 28, at 7.52 a.m., and lasted only six minutes.

The last time of anything is always sad. Don't you think the sad thing is that we seldom know when the last time has come? We could make so much more of it—From "Mary Rose," by J. M. Barrie.

SEVEN "MET" BROTHERS

Seven brothers named Spittle living in Stoke Mandeville, Bucks., entered the

100 YEARS AGO

From THE RAILWAY TIMES, May 10, 1945

On Saturday, May 24, will be published, **MAP OF ALL THE RAILWAYS IN GREAT BRITAIN**—to be presented **GRATIS** to every Six Months' Subscriber to THE SCOTTISH RAILWAY GAZETTE, and JOURNAL OF BANKING, INSURANCE, &c.

This complete and authentic Map has been specially constructed and engraved on copper by Messrs. W. & A. K. Johnston, Geographers to the Queen, and carefully revised by eminent Engineers, in which are delineated and distinguished by different colours, the Railways in operation, those in progress of formation, and those for which Acts have been obtained; also all proposed Railways, distinguishing those approved by the Board of Trade—the stations on each line being marked, as also the distances of principal towns and stations from London, and the several termini, with the length of each line. It also includes the steam boat tracks from the principal ports, showing the course and length of voyage, &c., &c.

Specimens of the Map may now be seen at the various Exchanges, Sharebrokers, and News Agents in the principal Cities of the Empire. Size of Map 29 inches by 19 inches.

The Scottish Railway Gazette is published every Saturday, and is devoted exclusively to the interests of Capitalists. Meetings of Shareholders are regularly and fully reported. It contains the daily Share Lists of London, Liverpool, Edinburgh, and Glasgow, and other authentic information; and is, in short, a complete Weekly Record of Joint-Stock and Commercial business in Scotland. It also provides the desiderated medium for concentrating all Advertisements and Public Notices addressed to Capitalists and Partners of Joint-Stock Companies.

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Dear Sir

We the undersigned wish for a reshufflement of locomotives on the Colne - Preston route as we have seen all the locos. Please put some Patriot locos on

Yours faithfully
J. X. J. Z. Y. K.

P.S. Please put some O-4-OT locos on also.

The Head Director. L.M.S.
Euston Station
London
England

The above is an example of some of the many strange letters which railway companies receive, and on which, from time to time, we have commented on this page

In a recent four weeks 450,000 quart bottles of beer from London breweries were despatched by the G.W.R. to troops overseas. Special trains were run for the purpose.

Amidst the shelves, cases of drugs, and medicine bottles in the rear of Main Hill's drug store in Belfast, Maine, the officers and directors of the Belfast & Moosehead Lake Railroad, America's only municipally-owned and operated steam railway, were winding up their monthly meeting. . . . And for the last twenty years, the life of Belfast has depended on the Belfast & Moosehead Lake Railroad. Twice a day it hightails across thirty-three miles of Maine Hills from Belfast, quiet and snug on Penobscot Bay, to Burnham Junction, where it connects with the Maine Central Railroad and the outside world.—From "Collier's" of January 13, 1945.

FIVE EPITAPHS

Goebbels

... Like a liar gone to burning hell—
Shakespeare

Goering

That bolting-hutch of beastliness, that swollen parcel of dropies, that stuffed cloak-bag of guts—Shakespeare

Himmler

May his soul burn
And never-dying worms
Feast on its pain for ever—Rossetti

Mussolini

A fixed figure for the time of scorn
To point his slow unmoving finger at
—Shakespeare

Hitler

The bloody dog is dead—Shakespeare
From "The Daily Express"



Mussolini, Hitler, Goering, and Ribbentrop at a Berlin railway station

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Record Earnings in January

Revenue from all services operated by the South African Railways & Harbours Administration amounted to £5,397,312 in January, thus setting up a new record, which exceeded that of November, 1944, by £22,438. There was a surplus for the month of £252,784, and the accumulated deficit of £59,290 at the end of December, 1944, was converted into a surplus of £193,494 at the end of January. This does not compare favourably with the position at the end of January, 1944, when the surplus was £596,556.

The volume of traffic did not exceed that handled in November, and the new revenue peak is attributable to earnings of harbours and airways services. In spite of the consistent patronage of the airways, the operation of the services since their resumption in December last is expected to result in a net deficit of £3,684, because considerable debits are still outstanding against airways. These could not be included in the January statement, hence the apparent surplus of £12,685 does not reflect the true position. Compared with the estimates, revenue from all sources in January, 1945, represents an improvement of £898,570. Expenditure, on the other hand, was £604,536 more than originally estimated.

Airways

During February 3,255 passenger journeys were made by the South African Airways, an increase by 797 as compared with January. The heaviest loads were carried over the direct routes between the Rand and Capetown *via* Kimberley and Bloemfontein. Despite the trebling of the service between the Rand and Capetown, *via* Bloemfontein, and the introduction of a weekly service from the Rand to Port Elizabeth, also *via* Bloemfontein, the percentage of seats filled on the section between the Rand and Bloemfontein remained high. On the Rand-Durban return service, the number of passengers travelling was 91.52 per cent. of the available seats.

Social Security on Railways

Speaking in Capetown recently, Brigadier C. M. Hofie, General Manager of Railways, said that the attitude of the South African Railways & Harbours Administration towards its employees had changed greatly since the old days when staff organisations had been looked at askance and employers were not interested in the welfare of their employees out of office hours. The Administration now took the staff into its confidence and met its representatives as partners. The Administration did its best to insure that after working hours the members of the staff went to happy and contented homes. To this change of policy he attributed the fact that for the first time during any war there had not been serious staff disturbances.

The staff enjoyed a considerable measure of social security; so much, in fact, that a number of employees had told him that they did not wish to pay any Government Social Security Tax, because they felt that they were already enjoying the benefits of social security. The staff comprised 82,000 Europeans and 61,000 non-Europeans. The Europeans with their dependents, represented more than one-tenth of the Union's total European population. The Administration was anxious to become a model employer. Last year it had under-

taken the most far-reaching salary and wage reforms it had ever attempted, at a cost of nearly £4,000,000. Its policy was to pay a fair salary, or wage, based on the importance of the work performed. It was paying £1 for £1 into the pension funds, which now totalled £35,000,000. There was a sick benefit scheme, employing 600 doctors, including every kind of specialist. Employees had special cheap travelling facilities. The Administration paid £587,000 a year in rent rebates to 16,370 of its staff. In its house ownership scheme it advanced the entire cost of a house at reasonable interest and already nearly 2,000 houses had been built under the scheme.

UNITED STATES

Signalling Developments

An order has been placed by the Chicago, Burlington & Quincy Railroad with the General Railway Signal Company for the installation of centralised traffic control over 131 miles of its single-track main line between Hastings and McCook, Nebraska; this route is used by the high speed "Denver Zephyr" streamliner and other express passenger services. The control machine will be at McCook; it will have a total panel length of 148 in., and there will be 100 lights for indicating track occupation, and 116 levers, controlling 36 switch machines, 7 electric switch locks, and 118 signals.

The Chesapeake & Ohio Railway has placed an order with the Union Switch & Signal Company for the equipment of 125 miles of single track between Ashland and Lexington, Kentucky, with automatic colour-light signalling. Installation will be by the railway's own staff.

Atlantic Coast Line Installation

The Interstate Commerce Commission has approved an application by the Atlantic Coast Line Railroad for permission to install continuous inductive electric train control on 234 miles of its principal Richmond-Jacksonville main line between Rocky Mount, North Carolina, and Florence, South Carolina, *via* Wilmington. This application has forestalled an order by the I.C.C., dated February 19 last, calling on the Atlantic Coast Line to show cause why it should not be required to install "an adequate block signal system" on a considerable mileage of main and secondary routes, over the great majority of which operation is still by the old timetable and train-order method, without signals. The order arises out of several recent collisions on the lines of this company, and covers a total of 2,100 miles of track.

New Diesel Streamline Trains

A change from steam operation with standard stock to diesel-electric power with lightweight streamline trains is being planned jointly by the Missouri Pacific Railroad and its subsidiary, the Texas & Pacific Railway. The trains concerned are the "Sunshine Special," one of which runs between St. Louis and the cities of Dallas and Fort Worth, Texas (742 miles), and the other between St. Louis and Houston and San Antonio, Texas (924 miles). Connecting streamline trains will run to and from Memphis, Tennessee; El Dorado, Arkansas; Shreveport and Lake Charles, Louisiana; and Galveston, Texas. The service will require four 4,000-b.h.p. and three 2,000-b.h.p. diesel-electric locomotives and 70 new vehicles, including 32 sleepers, 21 reclining-chair coaches,

7 dining cars or dinner-lounges, 2 sleeper-lounges, and 8 express, baggage, and mail vans; and will call for an outlay of about \$9,000,000. Orders are being placed at once for locomotives and vehicles, for delivery as soon as the War Production Board releases the necessary materials.

The Central of Georgia Railway also has a new streamline train on order, to operate between Atlanta and Columbus, Georgia; this will be a 4-coach train of Budd-built stainless steel type, with reclining chair cars. A 2,000-b.h.p. diesel-electric locomotive already has been obtained.

Aluminium Box Wagons

Recently the Mount Vernon Car Manufacturing Company, as part of larger orders for bogie box wagons, has completed three wagons in each of which the entire superstructure, including the framing, sides, ends, roof, and doors, is of aluminium alloy. One of the new wagons is going to the Chicago, Rock Island & Pacific Railway, and one to the Alton Railroad, and one to the Minneapolis & St. Louis Railway.

New Steam Locomotives

Ten steam locomotives of the 4-8-4 wheel arrangement have been ordered by the Chesapeake & Ohio Railway from the Lima Locomotive Works.

SWITZERLAND

Railway Financial Results, 1944

The financial results for the first nine months of 1944 of certain railways in central Switzerland show, on the whole, substantial improvements over those attained in the same period of 1943. These results, however, are mainly dependent on the war supplements on fares and rates in force since April 1, 1944. Further, it is stated that the working receipts of various railways and lake shipping concerns would have lagged behind the 1943 level because the 1944 tourist traffic was affected by unfavourable weather. Materials also cost more.

The following figures give an outline of financial results for 1943 and 1944:—

	Working receipts Swiss francs		Increase per cent. (approx.)
	First nine months of 1943	1944	
Vitznau—Rigi Railway	263,600	288,700	9½
Arth—Rigi Railway	375,500	386,200	3
Stansstad—Engelberg Railway	472,300	513,000	8½
Brunnen—Morschach— Axenstein Railway	44,000	49,500	12½
Treib—Seelisberg Rail- way	43,800	48,700	11
Pilatus Railway	223,000	222,300	—

The decline in the Pilatus Railway receipts was due to a decrease in goods traffic.

A comparison of the results attained in the first nine months of 1944 with the same period of 1938, the last full pre-war year, shows that a few railways have been able to off-set the loss of their foreign tourist traffic against an increase in their home tourist traffic, to which must be added the defence traffic. Thus, the working receipts which accrued in the first nine months of 1938 amounted to 244,100 francs in the case of the Arth-Rigi Railway, to 371,200 francs in the case of the Stansstad-Engelberg Railway and to 135,800 francs in the case of the Pilatus Railway. Other concerns, however, have not been able to improve on their unsatisfactory pre-war results. If a comparison be made with the working receipts for the same periods in 1928 and 1929, it will be found that the receipts of the Vitznau-Rigi Railway are down to under 60 per cent., those of the Brunnen-Morschach—Axenstein Railway and of the Treib-Seelisberg Railway are less than 45 per cent. and those of the Pilatus Railway are 26 per cent. below those attained in 1928-1929.

Trend of American Signalling in 1944

Greater use of C.T.C.—More colour-light signals, but semaphores still find favour—Wireless between train crews and dispatchers

SIGNAL engineering in the U.S.A. continues to exhibit a strong tendency towards the greater use of centralised traffic control equipment in place of purely automatic signalling added to the ordinary dispatching system. Extensive installations of such signalling continue to be made, however, with the adoption of remote control and relay systems of interlocking. The technical details of these arrangements are highly interesting and credit is due to the railway administrations which have applied the most modern devices to their lines, and to the signal industry, which has brought its appliances to a high state of development and has taken advantage of opportunities favourable to the use of electrical signalling.

The war has not been without its effect on the signalling position. Material and labour difficulties have occurred and a certain degree of control, with use of priorities, has had to be applied. In certain instances altered traffic requirements, caused by the demands of factories and camps, made it imperative to instal a considerable quantity of signalling equipment, without which the capacity of the routes concerned would have been greatly restricted and train movements liable to much delay. During 1944, however, the American and Canadian railways installed rather less new signalling than in the previous year (when all types of apparatus are considered) although the amount of centralised traffic control undertaken was greater, covering 1,265 route miles. The longest installation was on the Nashville, Chattanooga & St. Louis Railway between Nashville, Tennessee, and Stevenson, Alabama, a distance of 115 miles, while two installations, each over 100 miles long, were made on the Atchison, Topeka & Santa Fe Railway. A total of 596 pairs of power points and 2,141 signals were included in the 37 installations completed during the year, controlled by 1,374 handles. In some cases, as for example on the Denver & Rio Grande Western Railroad, a comparatively short equipped section formed the completion of centralised control over a considerable route, 284 miles in this instance. Proposals are being considered to continue the length of C.T.C., extending for 112 miles eastward from Denver, Colorado, on the Chicago, Burlington & Quincy Railroad, to meet the control now existing between Lincoln, Nebraska, and Hastings. This will result in the entire 483 miles of single line between Denver and Lincoln being operated on this system. The Burlington Company, which early recognised the great benefit to be obtained from using automatic signalling on its Chicago—Denver railway, is known to have derived considerable advantages in traffic working from its Denver—Akron C.T.C. equipment, which enabled the dispatcher to regulate the running and crossing of the "Zephyr" trains with the other services.

Circuit Interlocking Extended

With regard to ordinary interlocking work, only 19 new plants were installed employing mechanical locking; none was of any importance but 31 were rebuilt, of which the majority were electric, some electro-pneumatic, and a few mechanical.

The growth of circuit, or relay, interlocking technique, a marked feature of American practice of recent years, is indicated by the erection of 50 new signal boxes or control offices. The largest of these is on the Boston & Maine Railroad at Manchester, New Haven, controlling 53 signals and 34 point machines. Twelve similar installations were rebuilt. The war has led to the abandonment of many new projects and work under this heading has been kept to a minimum. Some 60 new installations of ordinary automatic signalling were completed, covering 734 route miles, including 666 single line. The longest installation was on the Canadian Pacific Railway, 84 miles, while the Missouri Pacific Railroad had one of 79 miles in length and another of 63 miles. In many cases only a very short distance was involved, to meet some special local requirements or to complete a gap between existing sections. Practically all the work was done with light signals, but semaphores still find favour, especially on lines abounding in sharp curves. The growing demands for high-speed services, combined with the increasingly exacting requirements of the Interstate Commerce Commission, have for some time resulted in much re-spacing and modernising of automatically signalled sections. Several extensive installations, laid down 35 years ago in some instances, when different principles were in vogue, have become out of date, both as regards the apparatus and the operation of the controls. Certain inherent weaknesses in some of these earlier installations have been brought out by accidents, such as that which involved the "Dixie Flyer," with a loss of 29 lives, on September 14, 1944, at Terre Haute, Indiana, on the Chicago & Eastern Illinois Railroad. Automatic signals should cover any instance where train orders are overlooked or instructions are given in error; this is, in fact, the principal purpose for which such signals are put in. It has been found, however, that in some cases defects in the controls can result in opposing trains receiving inadequate warning of each other's presence. This means that a stop indication, especially in poor weather, may be sighted too late to be effective. The Commission's latest regulations have been directed in part to removing this trouble and have led to the overhaul of a large amount of work. In 1944, on 367 route miles, the old signals were replaced by new, all of the colour-light type. In some instances the work merely involved replacing the signals, but in others the remaining equipment was changed; coded track circuits were adopted in some cases, and the controls were re-arranged. A large amount of this class of work is to be undertaken when peace returns. Spring switches for passing-loop points continue to be applied, as they eliminate much unnecessary delay on routes operated under the ordinary dispatcher rules.

Level Crossings

The rationing of petrol and consequent reduction in civilian motor car traffic has led the authorities to restrict work for the protection of crossings to those newly constructed in the neighbourhood of camps or war factories, where traffic is

considerable. There is a tendency to instal lifting barriers on crossings over multiple-track routes, and even at those over single lines where high-speed trains are run. It is well known that there are in America large numbers of motor drivers who constantly treat warning signs or lights with contempt and endeavour to drive over just in front of a train. Very serious results can follow for the railway traveller should this foolhardy behaviour lead to a collision, as it has often done, and nothing short of some means of closing the railway against other traffic can be really effective. Even then, there are cases of vehicles being driven into the barriers, sometimes in broad daylight, and the problem, which is part of the general one of education in road sense, appears as far from being solved in America as elsewhere. Of the 268 crossings dealt with in 1944, 10 were covered by private funds, 128 by railway funds, 87 by public funds and 43 jointly. A large amount of new work on crossings is to be undertaken when hostilities cease.

Wireless Communication

During the last few years renewed attention has been given to providing means of communication between guard and driver, particularly on long freight trains where it offers very real advantages under American operating conditions. Such communication is also desirable between trains and dispatchers' offices, and between trains themselves: during the last year or so especially, many arrangements have been tried and some put into regular service. There are considerable technical differences between them, but all may be broadly classed under the term wireless or radio, although often they are not quite covered by that term. The question of wave bands is still under discussion with the authorities, although a provisional allocation has been made. The U.S. Army Transportation Corps has made use of improvised equipment for communication between guard and driver on trains in France. At present, what is known as the inductive system, which is substantially limited to the railway right of way, is receiving quite extensive application. Two main-line, 4-track, divisions of the Pennsylvania Railroad, between Harrisburg and Pittsburg, are to be equipped, covering 245 route miles, with 275 locomotives, 90 guards' vans, and 6 wayside stations, affording a practical demonstration on a large scale. Another interesting project is that being planned to cover 560 route miles of the Kansas City Southern Railway, between Kansas City and Shreveport, Louisiana. This line is single throughout, with the dispatching effected by Morse telegraph, and carries a heavy traffic from the lines converging northwards from New Orleans and Port Arthur. Twenty wayside stations will be equipped. The Atlantic Coast Line Railroad has also decided on the equipment of 234 route miles, including an important freight yard, to determine to what extent the efficiency of working can be increased by these new methods. Another development that is attracting much attention is the use of wireless to contact shunting locomotives working in industrial districts or groups of sidings connected with warehouses and works in and near great centres such as Chicago. The freight traffic superintendent is able to give direct instructions to these locomotives and order movement as required to new locations, with a great saving of time.

Locomotive Coaling

Elevated roads to improved coal stages at G.W.R. engine depots

BECAUSE of war conditions the number of locomotives to be serviced at certain depots has increased considerably and it has become necessary to enlarge existing accommodation. An important feature in these depots is the stage provided to facilitate the coaling of locomotives. Coal wagons are pushed up an

incline on to a high-level track passing through the coal stage building and extending a few wagon-lengths beyond. The coal is loaded into tubs from the wagons in which it arrives. The tubs are discharged into the locomotive tender which stands on an adjacent track below the stage. The type of construction

required can be decided only after proper consideration has been given to conditions on the site, such as available space and the load-carrying capacity of existing ground.

In the first of three recent schemes an existing single-sided coal stage was converted for double-sided use. It became necessary also to raise the stage because of the increased height of locomotive tenders. The raising of the banks leading up to the stage could not be done by tipping additional filling because the

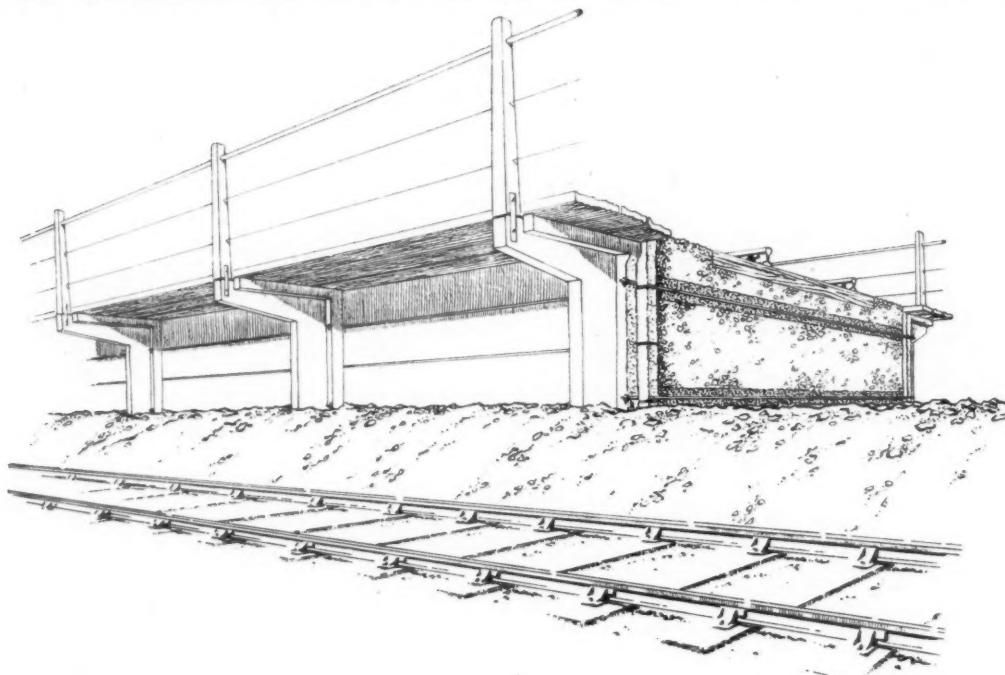


Fig 1—The design for a coal stage employing pre-cast concrete units with ash filling. Steel tie-rods with concrete casings are used to prevent spreading

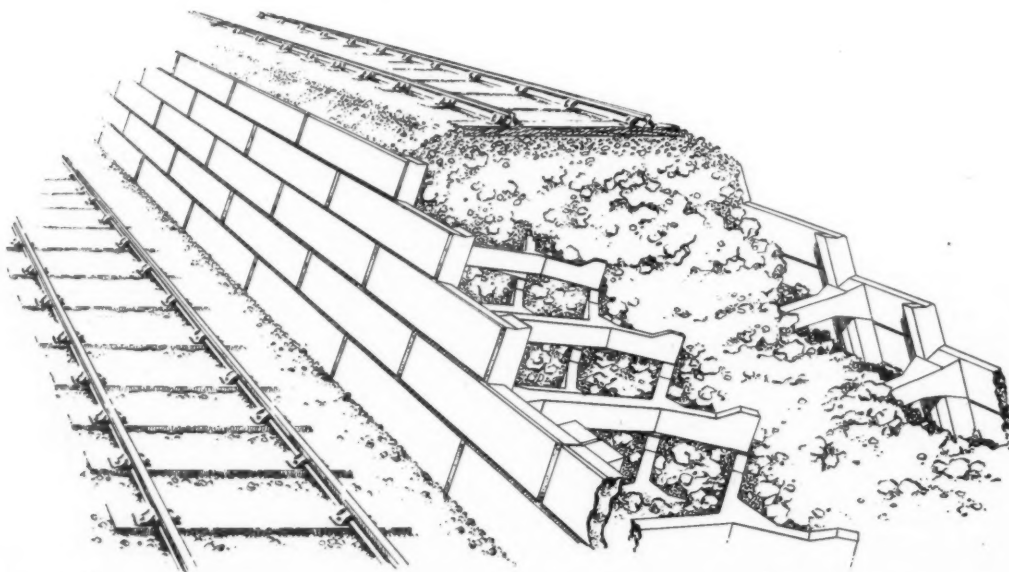


Fig. 2—Showing the construction of crib walling comprising anchors and face members with dove-tail projections

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necessary space on each side was not available. The construction of retaining walls on each side was not altogether satisfactory as the bearing capacity of the existing ground was low and extensive foundation work would have been necessary to avoid risk of the walls settling. Finally the design shown in the accompanying illustration, Fig. 1, was evolved. This specified a long box-like structure of pre-cast concrete units laid on top of the existing bank and filled with ashes to raise the tracks to the required level. Pre-cast slabs, laid on edge along each side of the track, are held in position by pre-cast piers at 7-ft. 6-in. intervals. Opposite piers are tied together by tie-rods under the track. The original intention had to be modified slightly owing to wartime difficulty in obtaining timber for the moulds of the concrete pier-blocks and brick piers were substituted.

The pre-cast concrete slabs retaining the ashes are 15 ft. long by 12 in. by $4\frac{1}{2}$ in. and are reinforced with British Reinforced Concrete No. 2 fabric. The tie-rods are arranged in pairs; one set is 9 in. from the top of the pier and the other pair 3 ft. lower. The rods are $\frac{3}{4}$ in. diameter and are embedded in concrete as a protection from corrosion. The footways consist of two rows of pre-cast concrete slabs 15 ft. long by 12 in. by 3 in. reinforced by B.R.C. No. 6 fabric and supported by the piers and the pre-cast cantilever units built into the top of the piers. These units also serve as fixings for the handrail posts. The resident engineer in charge of this work was Mr. E. T. Davies, M.C., M.Inst.C.E.

A second scheme involved the construction of a new double-sided coal stage. Restriction of space precluded tipping to form an embankment and pre-cast reinforced concrete crib-wall units were used as shown in Fig. 2. The flexibility of a crib wall, of course, adjusts itself to a certain amount of ground settlement on the site. The ash filling behind the crib walling followed the construction of the walls. Labour shortage was overcome by the employment of a No. 16 Ruston-

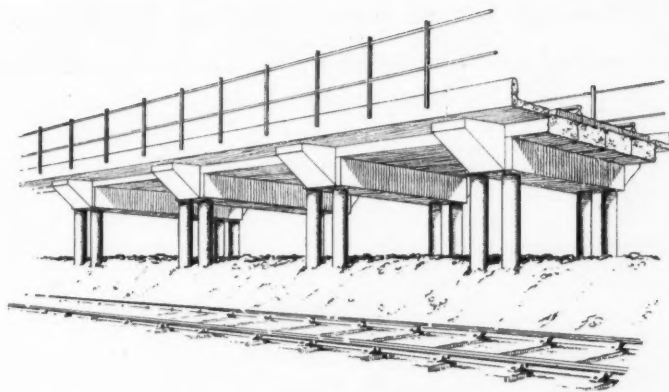


Fig. 3—A coal stage built on concrete piles with cast in-situ caps and pre-cast beams. Footways are provided by light-section concrete slabs

Bucyrus navy adapted to unload ash filling, by grab, from rail wagons into dumpers. The units forming the crib walls were also handled by a mechanical navy adapted for the purpose. It will be noted from Fig. 2 that only three units were used in the construction of the wall, namely, an anchor member, a face member, interlocked by a dove-tail projection, and a half-face member (not shown) to break the joint. The wall foundations were prepared to a 1 to 6 batter on the horizontal to give the finished wall the same batter on the vertical face. The resident engineer in charge of this work was Mr. C. R. A. Shackle.

In the third scheme the work involved the demolition of an old coal stage and the building of a new structure. In the design illustrated in Fig. 3 concrete piles were specified to carry the loads of the coal stage building. Access to the 120 ft. portion of the elevated road beyond the building was restricted until the structure had been built and the inclined track

raised to the new level. Limitation of space precluded the tipping of an embankment. Accordingly piles were driven also for the extension of the elevated track and extended as columns above ground level. Caps were cast on the pile heads, which in turn supported pre-cast reinforced concrete beams, laid side by side, spanning the caps. Light-section pre-cast slabs were fixed on each side of the track for footways. Stone ballast was spread on top of the concrete beams and the track was laid on top. The average length of the piles was 19 ft. and they were driven at a rate of about eight piles per day. Occupation of the adjoining tracks for the erection of the fifty-eight pre-cast concrete beams had to be reduced to a minimum and the original estimated time of twelve hours for this was, in fact, reduced to ten hours. The beams were conveyed to the work from the site where they had been cast on wagons. The resident engineer in charge of this work was Mr. W. J. Mackintosh, A.M.Inst.C.E.

PLASTICS IN ENGINEERING.—In a paper on plastics in engineering read by Dr. V. E. Yarsley, D.Sc., M.Sc., F.R.I.C., before the Society of Engineers at Burlington House on May 7, the author dealt first with a consideration of plastic materials commercially available, and a brief description of some of the methods operated for their application. He counteracted some of the erroneous ideas about these materials of construction which have grown up in recent years, mainly on account of overzealous propaganda and the secrecy which has been enforced during wartime. These new materials were not likely to sweep away conventional materials of construction, but wisely applied, they could aid the engineer to overcome many long-standing difficulties. Plastics were relatively expensive materials, so that they could be applied logically and economically only in "key" roles. By comparison with established industries, the plastics industries throughout the world were relatively small, and it was doubtful if world production at the present time of legitimate plastics exceeded one million tons a year.

Dr. Yarsley dealt with some of the more recent applications of plastics in various fields of engineering, and in particular the use of plastic adhesives and cements. From relatively small beginnings this branch of the industry had grown rapidly during the past two years. It had been

proved that for certain purposes, plastic bonded metal to metal joints were superior to riveted or welded joints, and already the uses of these materials in bonding extruded aluminium rod in the production of window and cycle frames had passed beyond the experimental stage.

SURPLUS MACHINE TOOLS IN N. IRELAND.—It has been decided to maintain in Belfast a complete record of all surplus Government machines in Northern Ireland.

Full information regarding the operation of the disposal scheme can be obtained from the Machine Tool Control Regional Office, Law Court Buildings, Chichester Street, Belfast.

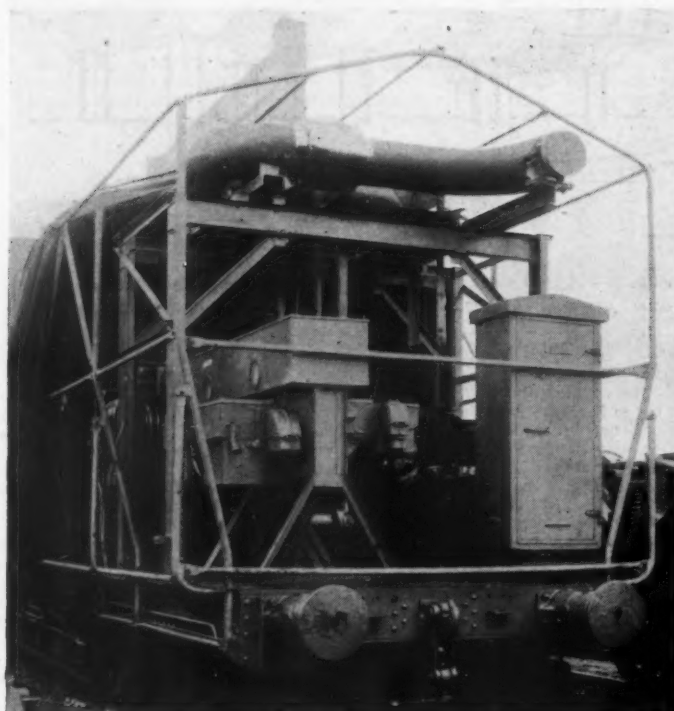
MACHINE TOOL SURPLUS IN THE UNITED STATES.—A statement on the policy of the machine tool industry in the United States was made recently by Mr. William Kirk of the Niles-Bement-Pond Company of West Hartford, Connecticut. Mr. Kirk informed the Senate War Surplus Committee that by the end of 1945, the United States would have 1,752,000 machine tools. At the beginning of 1940, some 942,000 of these machine tools were available and 800,000 had been constructed since. Nearly 700,000 machine tools were over fifteen years old and ranked as surplus. With regard to disposal it was held that sales could be made through the original builder, who would rebuild units for peacetime use

and re-sell under guarantee. Mr. Kirk said that exports of machine tools from 1926-1936 did not exceed \$146 millions in value, of which \$30 millions were taken by Great Britain and \$38 millions by Soviet Russia. The export figure now envisaged was \$1,742 millions, based on the assumption that half-built war machines would be useless.

GRAND UNION CANAL COMPANY.—Speaking at the annual general meeting of the Grand Union Canal Company, Mr. John Miller, the Chairman, said the Chairman of the railway companies in their recent annual statements pointed out that increases of upwards of 50 per cent. on pre-war rates would be necessary to maintain railway revenues at proper levels after the termination of control. The tolls and charges of the Grand Union Canal Company, which before the war were at levels that were barely economic and in some cases were uneconomic, had since the war been increased by an overall average of only 33½ per cent. and figures available sufficiently demonstrated the inadequacy of the increase. Lighterage companies, which were uncontrolled, had been permitted to increase their rates by upwards of 60 per cent. above pre-war, and if they carried traffic on canals they received in addition a subsidy of 50 per cent. of the tolls paid by them to the canal undertakers.

Rail-borne Mobile Power Stations for Russia

Coal and oil-fired units built by the Metropolitan-Vickers Electrical Co. Ltd.



Truck of 2,500-kW. unit, showing low-tension auxiliary switchboard, generator kiosk, and auxiliary transformer

THE Metropolitan-Vickers Electrical Co. Ltd., at the request of the Ministry of Supply, is supplying mobile units of 1,000 kW. to burn low-grade coal or oil fuel, of 2,500 kW. arranged for coal-firing, and of 5,000 kW. to be oil-fired.

When there was a possibility of considerable damage to this country's power installations by enemy action, consideration was given to the design of temporary transportable power sets for emergency operation of the more essential services. Designs were prepared for power units of this type mounted on road vehicles and on barges. Although this equipment was not required for use in Great Britain, the devastation over large areas of the U.S.S.R. resulted in urgent need for power to be available immediately for assisting reconstruction in the territories as they became liberated. For these territories the power houses had to be mounted on railway rolling stock, and so the designs were altered to meet that requirement.

To cater for the varied conditions, both of fuel available and capacity required, it was decided to standardise on the four classes of units referred to above. A factor of some consequence was that components already developed would have to be incorporated, as time and other circumstances would not permit the development of new designs. These units were designed to conform with the track gauge and the generous loading gauge of the Russian

railway systems. It was stipulated that these units should be completely self-contained, and require only supplies of fuel and water on site.

The train consists generally of a boiler wagon, a power wagon and a standard wagon to carry loose items and spares, but in some cases an additional wagon has been coupled to carry a number of the auxiliaries.

Although these units of necessity have been designed with dimensional limitations, they operate with an efficiency comparable with that of permanent land stations of like capacity. In the case of coal-fired units, moreover, fuels of low calorific value were allowed for. As a protection against weather, each wagon is covered by a stout canvas shrouding mounted on tubular supports.

The 5,000-kW. station in its three-wagon arrangement has an overall length of 143 ft. 5½ in., excluding the standard wagon of loose items. The 2,500-kW. set requires two boiler-wagons and is 203 ft. 10½ in. long. Axle loading has been restricted to 18 tons.

The 1,000-kW. coal-fired boiler manufactured by John Thompson Limited, Wolverhampton, is of the mobile, water-tube type. It consists of boiler tubes, steam and mud drums, water-cooled combustion chamber, side and roof walls, together with integral economiser. The stoker is of motor-driven chain-grate type, and has a door at the rear for the removal of ashes. Coal is raised to the stoker

hopper by a motor-driven belt conveyor. This boiler has a maximum continuous rating of 16,750 lb. of steam an hour, generating steam at 382 lb. per sq. in. at superheater outlet, and a temperature of 690 deg. F.; the rating is based on a low-grade fuel of 7,840 b.t.u. per lb. calorific value.

The 1,000-kW. oil-fired unit is supplied from a La Mont type water-tube boiler and is manufactured under licence by Ivor Power Co. Ltd. It is built in two sections; the first is the combustion-chamber cooling tubes and the second the boiler-convection elements, arranged in two banks to provide space for the superheater. In normal circumstances water circulation is obtained by a steam-driven turbine pump taking water from the underside of the steam-and-water drum, and discharging to the boiler-distribution headers. The boiler has a m.c.r. capacity of 17,500 lb. of steam an hour, generating steam at 390 lb. per sq. in. and 690 deg. F., with oil fuel of 17,650 b.t.u. per lb. calorific value.

The boiler for the 5,000-kW. equipment is of the Foster-Wheeler design manufactured under licence by Ivor Power Co. Ltd. It comprises a steam drum, a water drum and a water-wall header, arranged to promote natural water circulating, together with a superheater arranged for two-pass flow. A single-effect evaporator is included for supplying the boiler-feed make-up and is fed with the exhaust from the steam turbine driving the forced-draught fan, supplemented by live steam at reduced pressure. The boiler has a m.c.r. capacity of 65,000 lb. of steam an hour, generating steam at 392 lb. per sq. in. and 700 deg. F., with oil fuel of 17,500 b.t.u. per lb. calorific value.

The turbine is self-contained, and the condenser is made integral with the turbine exhaust to economise in weight and headroom. The condenser is of the single-shell surface type with an effective cooling area of 806, 1,470 and 2,540 sq. ft. respectively for the 1,000-, 2,500- and 5,000-kW. sizes of unit. The alternator generates current at 6,300 volts, 3-phase, 50 cycles, 0.8 power factor, 1,500 r.p.m. The generated supply voltage—6,300 volts—is not suitable for operating the auxiliary motors and an oil-immersed, naturally-cooled, outdoor type transformer is provided to transform down to 380 volts.

The high-tension switchgear is self-contained in a weatherproof kiosk of conventional type; the main-generating panel and two or more feeder panels are accommodated in its separate chamber. The protection elements include overcurrent and restricted earth fault relays with rectifier detail and a Metrosil surge diverter. The control gear comprises the control board and the boiler-auxiliary panel. The control board consists of two oil circuit-breakers for the auxiliaries, together with one or more breakers on low-tension feeders for operating local services at users' request. These breakers are combined with distribution gear in which the total number of oil breakers is five.

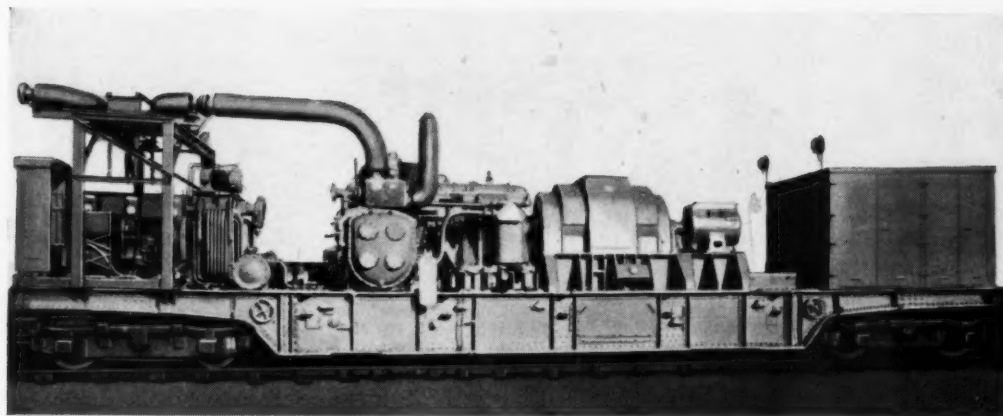
Lubrication has received particular attention and a complete system has been evolved. Forced lubrication is provided where advisable and a heater is included in the lubricating-oil tank as a precaution against freezing.

The layout is designed to have a clear gangway along the side of the train for the attendants to pass from one section to another.

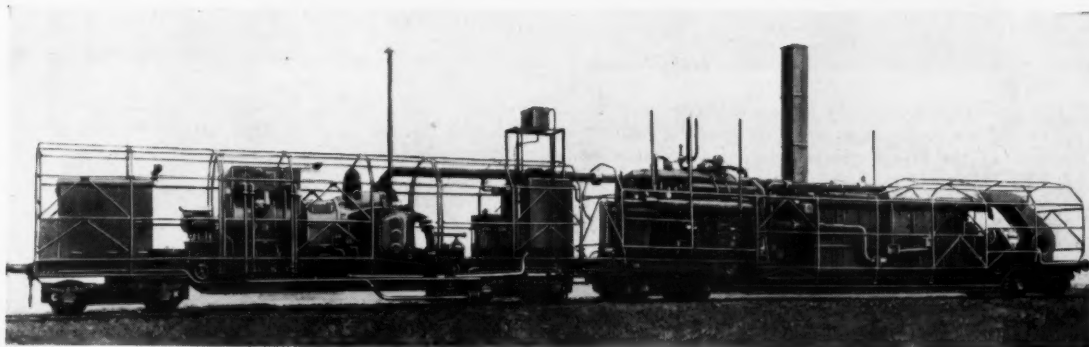
A number of sets of the types described above are in service and others are in transit or in course of assembly.

(See also illustrations on opposite page)

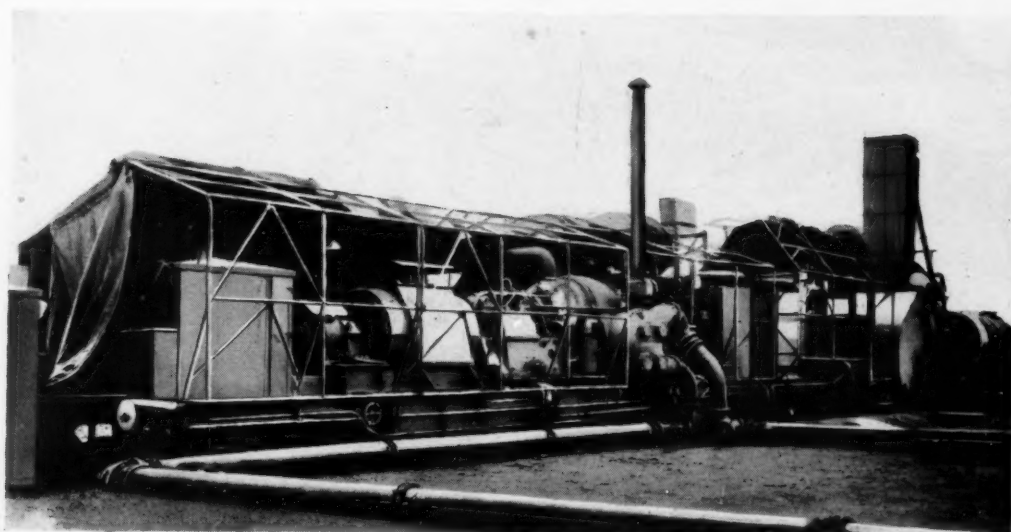
Rail-borne Mobile Power Stations for Russia



Power truck of 2,500-kW. mobile power station, built by the Metropolitan-Vickers Electrical Co. Ltd. for Russia at the request of the Ministry of Supply



Mobile units of 1,000-kW. oil-fired power station ready for shipment. The boiler is of the La Mont water-tube type built in two sections



A 5,000-kW. oil-fired mobile power station on test. The water-circulating pipes in the foreground are carried in the wagon containing loose items

V 2 Rocket Bomb Damage on the Southern Railway



Southern Railway bridge at Southwark Park Road, on the approach to London Bridge Station from New Cross, after its part destruction by a V2 rocket bomb in November last. The part of the bridge affected carried three running lines; these were again open to traffic on the ninth day after the incident (See also page 477)

Aerial View of Cologne after Bombardment



A grim picture of desolation in Cologne, fourth city of Germany. Half submerged in the river are the famous Rhine bridges (from left to right), the Hohenzollern, the Hangbrücke (or Hindenburg suspension road bridge), and the Sudbrücke. The Hauptbahnhof, Cologne's central railway station, is seen to the left of the Cathedral

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RAILWAY NEWS SECTION

PERSONAL

The Hon. Geoffrey C. Gibbs has been elected a Director of Barclays Bank (Dominion, Colonial & Overseas). He is a Director of the London & North Eastern Railway Company.

Mr. E. C. Holroyde, Joint Managing Director of Crompton Parkinson Limited, has been appointed Chairman of the British Electrical & Allied Manufacturers' Association.

L.M.S.R. APPOINTMENTS

Mr. H. Bullough, Assistant (Research), Chief Commercial Manager's Office, Watford, H.Q., to be Assistant District Goods Manager, Leeds, in place of Mr. M. H. Sifton, promoted.

Mr. M. H. Sifton, Assistant District Goods Manager, Leeds, succeeding Mr. H. Bullough, as Assistant (Research), Chief Commercial Manager's Office, Watford, H.Q.

Mr. A. D. Cochran, Assistant Superintendent, Wyre Dock, to be Assistant District Operating Manager, Stoke.

Mr. W. T. G. Yabsley, Clerk (Ports & Docks), Station Working Section, Chief Operating Manager's Office, Watford, H.Q., succeeding Mr. A. D. Cochran, as Assistant Superintendent, Wyre Dock.

Mr. T. P. Joyce, Deputy Parcels Agent, Manchester, to be Passenger Agent, Manchester (Victoria, Exchange, Salford, Ordsall Lane & Town Office), in place of Mr. J. Day, retiring.

Mr. W. Woodcock, Stationmaster, Fleetwood (also in charge of Wyre Dock & Burn Naze), to be Passenger Agent, Southport, in place of Mr. C. Hinchliffe, promoted.

Mr. L. A. Pearman, Chief Clerk, Goods Department, St. Pancras, to be Goods Agent, Bow & Old Ford, in place of Mr. F. H. Middleton, retired.

Mr. J. Hanmer, Chief Clerk, Goods Department, Stockport, to be Goods Agent, Tipton, in place of Mr. G. Jackson, transferred.

Mr. H. W. Talbot, Chief Clerk, Shropshire Union Canal, Chester, to be Canal Agent, Shropshire Union Canal, in place of Mr. A. Thompson, retired.

Mr. A. Groom, Chief Collector, London Goods Accounts, to be Agent, West Smithfield, in place of Mr. J. G. Slough, retiring.

Mr. P. F. Markham, Stationmaster & Goods Agent, Melton Mowbray (also in charge of L.M.S.R.-L.N.E.R. Station), to be Stationmaster & Goods Agent, Whitchurch, in place of Mr. J. F. Starbuck, promoted.

Mr. W. F. Beatty, Assistant to District Engineer, Blackburn, to be Assistant to District Engineer, Watford, in place of Mr. G. D. S. Alley, promoted.

Mr. M. J. Wardle, Resident Engineer, Hawes, to be Assistant to District Engineer, Leeds, in place of Mr. J. K. Sidebottom, retiring.

Mr. G. E. Procter, Acting Resident Engineer, Camp Hill, to be Resident Engineer, Manchester, in place of Mr. H. R. Disley, retiring.

Mr. C. L. Parkinson, Draughtsman, Chief Engineer's Office, Watford, to succeed Mr. G. E. Procter, as Acting Resident Engineer, Camp Hill.

Mr. Charles Matthew Cock, M.I.E.E., who, as recorded in our last week's issue, has been appointed Chief Electrical Engineer, Southern Railway, was born in Melbourne, and received his engineering training at the Newport Locomotive, Carriage & Wagon Workshops of the Victorian Government Railways. After the outbreak of war in 1914 he served as a midshipman with the combined naval and military expedition which in September of that year landed in German New

area including Bombay. He held the last-named post in January of this year, when appointed to the Southern Railway. In addition to his railway duties, in 1940 Mr. Cock organised the Bombay Harbour Motor Boat Patrol, manned principally by local yachtsmen, and was in command until his full-time services were loaned to the Royal Indian Navy; but while he was serving afloat as Lt.-Commander, R.I.N.V.R., it became necessary, on account of the increasing pressure on Indian railways, to recall him to railway duties early in 1942. Mr. Cock is an Associate Member of the Institution of Engineers (Australia).

Among the Sheriffs appointed for 1945 are Lt.-Colonel Sir Albert Stern (Kent), a Director of the Midland Bank Limited; the Hon. R. H. V. Smith (Oxfordshire), a Director of Vickers Limited; Lt.-Colonel G. P. Pollitt (Shropshire), a Director of Imperial Chemical Industries Limited; and Lt.-Colonel E. G. Thin (Worcestershire), a Director of the Isle of Man Steam Packet Co. Ltd.

At the recent annual meeting of the Southampton Harbour Board, Mr. H. A. Short was re-appointed Chairman for 1945-46, and Alderman T. Lewis was re-appointed Deputy-Chairman. Mr. Short is Docks & Marine Manager, Southern Railway, and Chairman of the Southampton Port Emergency Committee.

SOUTHERN RAILWAY APPOINTMENT

The Southern Railway has appointed Mr. H. G. Snell as Assistant for Train Services, in succession to Mr. S. A. Fitch.

Senhor A. de A. Vasconcellos Corrêa, President of the Council of Management of the Portuguese Railways Company, recently completed 50 years of service with the undertaking. At a congratulatory ceremony the Minister of Public Works decorated him, on behalf of the Government, with the Grand Cross of the Order of Industry.

Mr. Arthur Foster has been elected Chairman, and Mr. Hermann Rawlinson, a Director, of the Rochdale Canal Company.

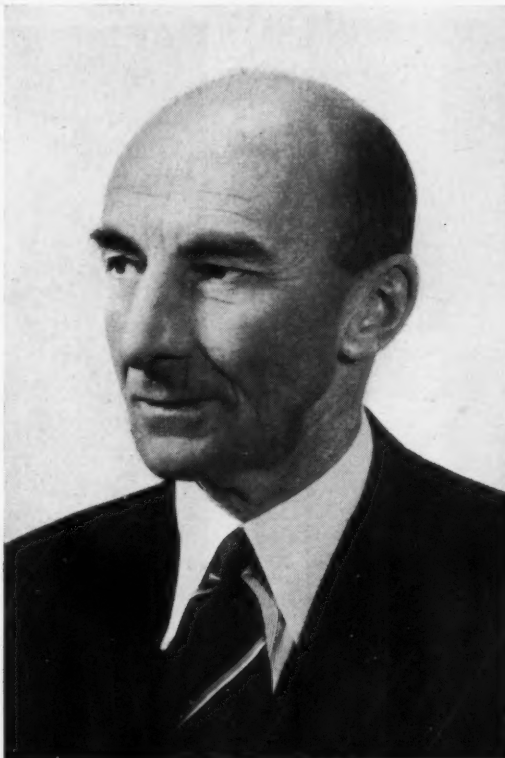
L.N.E.R. APPOINTMENT

The L.N.E.R. announces that Mr. F. W. Osborne, Chief Clerk, Bishopsgate, has been appointed Acting Goods Agent at Bishopsgate.

We regret to record the death on May 2 of Mr. Herbert Mends Gibson, O.B.E., who was General Manager, Manchester Ship Canal Company, from 1934 to 1936.

Sir Douglas Hacking has been appointed a Director of the National Omnibus & Transport Co. Ltd. He is a Director of Thomas Tilling Limited, and of the Bristol Tramways & Carriage Co. Ltd.

Mr. Stanley Clowes (General Works Manager), Mr. W. Lord (Commercial Manager), and Mr. W. D. Moore (Chief Accountant) have been elected Directors of Craven Bros. (Manchester) Ltd.



Mr. C. M. Cock

Appointed Chief Electrical Engineer, Southern Railway

Guinea, and subsequently served afloat in the Pacific and in the North Sea. He became Engineer Lieutenant, Royal Navy, in January, 1919, and left the service towards the end of that year, when he joined the staff of Messrs. Merz & McLellan, Consulting Engineers. While with that firm, Mr. Cock worked as Personal Assistant to the late Mr. E. P. Grove, its Chief Resident Engineer on the electrification of the Melbourne suburban lines of the Victorian Government Railways and the construction of Newport "B" Power Station for the Victorian Electricity Commission. On completion of those works in 1924 Mr. Cock proceeded to India as one of the supervising engineers of Messrs. Merz & McLellan on the electrification of the G.I.P.R. suburban lines, the B.B.C.I.R. suburban lines, and the main lines of the G.I.P.R. to Poona and Igatpuri. In 1929, when the electrification was completed, Mr. Cock joined the G.I.P.R., and held appointments as Distribution Engineer and Rolling Stock Engineer before being appointed Traction Superintendent and subsequently Divisional Superintendent for the

Mr. W. Howard-Williams, C.B.E., who, as recorded in our April 27 issue, has resigned the Chairmanship of the Central Argentine Railway Limited, of which he remains a Director, was born in 1879. He began his railway career as a cadet on the London & North Western Railway in 1897. He served his training in the Traffic and Goods Departments, and, after varied experience in several districts, was appointed in 1906 Assistant District Goods Manager, South Staffordshire. Four years later he was appointed to a similar position in the Liverpool District. In 1912 he was transferred to Euston as Head of the Con-

PRESENTATION TO MR. W. J. ENGLAND

At a meeting of the Railway Clearing House Operating Superintendents' Conference on May 2 a presentation was made to Mr. W. J. England to mark his recent retirement from the position of Superintendent of Operation, Southern Railway. Mr. Gilbert Matthews, Superintendent of the Line, Great Western Railway, who presided, paid tribute to the valued co-operation of Mr. England and expressed his appreciation of the help he had received from him during many years. Other members of the conference also expressed their esteem and respect for Mr. England.

The Rt. Hon. Lord Forbes, who, as recorded in our April 27 issue, has been appointed to succeed Mr. Howard-Williams as Chairman of the Central Argentine Railway Limited, joined the board of that company in 1931. Lord Forbes was born on March 20, 1888, and was educated at Eton and Cambridge. He served in the 1914-18 war in France and Egypt. He has many interests in South America, and is a Director of the Buenos Ayres & Pacific Railway Co. Ltd. and Buenos Ayres Western Railway Limited; Vice-Chairman of Balfour, Williamson & Co. Ltd.; and a Director of Lobitos Oilfields Limited and Anglo-



Mr. W. Howard-Williams

Chairman, Central Argentine Railway Limited, 1934-45, who remains a Director



Lord Forbes

Appointed Chairman, Central Argentine Railway Limited

ciliation Department, and later on became Mineral Traffic Manager. During the last war Mr. Howard-Williams acted as Deputy and afterwards Director of Inland Transport of the Ministry of Munitions; he was transferred in 1918 to the Board of Trade to assist the Coal Controller during the coal crisis, and in the same year he was appointed Assistant General Manager of the L.N.W.R. He also attended the International Labour Conference at Washington in an advisory capacity to the Employers' Delegate. In 1920 Mr. Howard-Williams went to South America as General Manager of the Central Argentine Railway, from which position he retired in 1926, when he joined the board of the company in London. In May, 1934, he was elected Deputy-Chairman, and, towards the end of the same year, Chairman. Mr. Howard-Williams is a Director, among other companies, of the Buenos Ayres & Pacific Railway Co. Ltd.; United Railways of the Havana & Regla Warehouses Limited; Metropolitan-Cammell Carriage & Wagon Co. Ltd.; Anglo-Ecuadorian Oilfields Limited; and Lobitos Oldfields Limited. (See also editorial note).

Circumstances prevented a number of colleagues of Mr. England from being present, but reference was made to letters conveying their best wishes to him. Mr. Gilbert Matthews then handed to Mr. England a cheque, which he was asked to accept as a token of the esteem in which he was held by his operating colleagues. Mr. England in a short reply expressed his thanks for the gift and for the tributes paid to him.

Mr. H. W. Puttick, Chief Electrical Engineer, North Western Railway, India, is in this country, on leave preparatory to retirement.

INSTITUTION OF MECHANICAL ENGINEERS

Among those recently transferred from associate membership to membership of the Institution of Mechanical Engineers is Mr. E. C. Ottaway, Technical Officer, Department of the Chief Engineer (Buses & Coaches), London Passenger Transport Board. Associate members recently elected include Mr. J. S. Jepson, Messrs. Fox & Mayo.

Ecuadorian Oilfields Limited. He has on many occasions visited Argentina; his latest visit was in 1943. In 1940 Lord Forbes was appointed a Business Member of the Industrial & Export Council, Board of Trade; and in the same year he visited South America as a member of the Willingdon Mission.

The Minister of Supply has agreed to release Mr. A. G. E. Briggs from the post of Deputy-Controller of Iron & Steel Supplies, as from April 30. His services will continue to be available in an advisory capacity. Mr. K. G. Lampson has been appointed Deputy-Controller.

INDIAN RAILWAY STAFF CHANGES

Mr. B. A. Berry has been appointed to officiate as Chief Engineer, M.S.M.R.

Mr. B. C. Drummond has been appointed to officiate as Deputy Controller of Stores, N.W.R.

Major S. J. Oakshott has been confirmed permanently as Marine Superintendent, B.N.R.

TRANSPORT SERVICES AND THE WAR—293

Railways and the V2 Attacks

Some details may now be published of the recent German V2 rocket attacks on Southern England. The first rocket fell on the evening of September 8, 1944, at Chiswick, and the last on March 27, 1945, at Orpington. The total number of rockets reaching this country during that period was 1,050. The total casualties were 2,754 killed, and 6,523 seriously injured. London was the target of the rockets, as it was of the flying bombs. On their way to London, rockets caused considerable damage by falling short, especially in Essex, Hertfordshire, and Kent. The rocket attack reached its height during one week in February when 71 fell on Southern England. Totals of 50 or 60 rockets a week were common throughout February and March, many of them on London and Essex, with some in Kent and Hertfordshire.

Although the V2 attacks on this country did not leave the railways unscathed, the results achieved by this weapon were small in comparison with the bombing of 1940-41, and the V1 flying bomb attacks of last year, partly because of the smaller number of V2s compared with the intensive attack of V1s, and also because V2 damage tended to be more localised in its intensity, without the widespread blast effects.

In contrast with the flying bombs, which affected principally (though by no means exclusively) the Southern Railway, the L.N.E.R. was the principal railway sufferer with the V2s, by reason of its geographical position, as the main place of discharge appears to have been Holland. The L.N.E.R. sustained considerable damage to its rolling stock, track, and other property from nearly one out of every seven V2s that fell in Southern England; altogether 149 caused damage to the company's property between September 16 and March 27. The first V2 to fall on the L.N.E.R. made a direct hit on the track at Palmers Green, damaging the station, signalling, and fencing, but traffic was resumed after an interruption of 24 hours. Other traffic delays were caused when V2s fell at Wood Green and Angel Road (where in both cases the tracks again received direct hits), Muswell Hill, Stratford, and Ilford, but in no case was the delay more than 13½ hours, owing to the rapidity with which L.N.E.R. engineers repaired the damage. The Stratford area suffered heavily, and there were many instances of damage to rolling stock, tracks, stations, marshalling yards, signal boxes, workshops, and numerous other buildings.

On the Southern Railway, one stretch of line less than 2 miles in length was closed temporarily no fewer than five times because rockets fell close to the track. Another incident occurred between Surbiton and Esher Stations, in November last, when 130 ft. of parapet wall of a viaduct were completely destroyed and the signal box was damaged. Although four main lines and two suburban lines were affected by this explosion, normal working was restored on the day after the mishap. Also in November last, Southwark Park Bridge, on the approach to London Bridge Station from New Cross, where a number of lines converge, was partly destroyed. The part of the bridge affected carried three running lines which were lifted clear of the bridge abutments, and collapsed into the roadway below, as shown in our illustration, page 474. On the ninth day after the incident the three lines were again open to traffic.

Other V2 incidents on the Southern Railway occurred at St. Mary Cray, Greenwich, Maze Hill, Hither Green, and New Cross.

There were eight direct hits on the L.M.S.R. and 33, which, falling near to the lines, caused damage to L.M.S.R. property. One of the worst incidents occurred at Tilbury, Riverside Station. The rocket demolished the carriage sidings on which it fell, damaged the passenger station, sidings and rolling stock, including 13 wagons and 142 coaches. Four coaches of an ambulance train were badly smashed. The goods shed and offices were practically demolished and damage was caused to two ferry boats, the L.M.S.R. Marine building and the stationmaster's house. The first recorded incident on the L.M.S.R. was in September at East Ham.

Swiss Help for French Railways

As a result of the negotiations concluded in Berne on March 8, between the British and Allied delegations on the one hand and the Swiss Government on the other, Switzerland is to loan to France 500 tank wagons, which will facilitate considerably the conveyance of mineral oil products to be imported by France, both for civilian and military uses. According to Swiss press reports, this loan is being made as "economic collaboration" with the French Government. The latter will put the wagons to whatever use it sees fit, even if this involves loaning them to the American armies.

The Franco-Swiss railway agreement reached in Paris on March 24 provides for Switzerland to take over part of the repair work of French locomotives and rolling stock occasioned by war damage. This work will be begun without delay, and will be effected both in the repair shops of the Swiss Federal Railways and also by the Swiss railway industry. The first batch, consisting of three heavily-damaged express locomotives and the remains of the bodies of 17 goods wagons on their respective frames and wheels arrived in Switzerland on April 6 via Les Verrières. The locomotives are at present being repaired in the works of the Schweizerische Lokomotiv- und Maschinenfabrik at Winterthur. The sides of the cabs and boilers are reported to be riddled with bullet holes. A striking feature common to all three is that the re-

treating Germans stripped them of all their brass and copper components. The goods wagons have been transferred to repair shops of the Swiss Federal Railways.

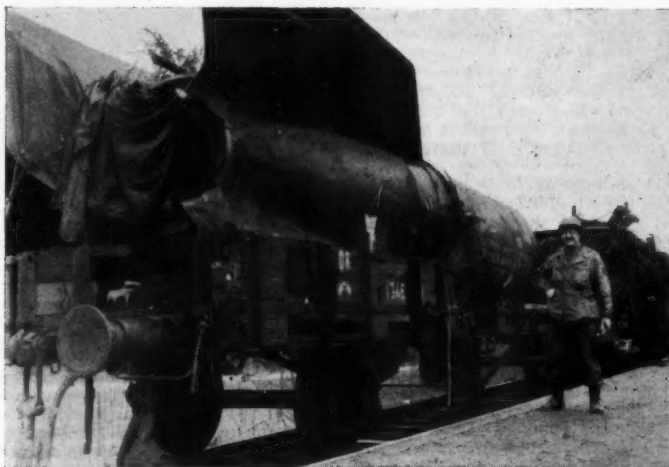
U.S.A. Army Rolling Stock for Europe

Train-carrying freighters and specially-converted L.S.Ts. have ferried more than 21,000 locomotives and goods wagons to the Continent since "D"-Day, according to a recent announcement from the Headquarters of the U.S.A. Transportation Corps Second Military Railway Service. By January 1, the ships had brought to Europe more than 1,500 locomotives, 19,000 wagons, three dozen hospital trains, and numerous pieces of special railway equipment such as cranes, breakdown trains, and mobile workshops. Landing of equipment in France began on July 10, on which day several landing craft with loads of rails, sleepers, and rolling stock on rails welded to the decks, beached themselves in Normandy. Rails and sleepers imbedded in concrete blocks were laid on the beach leading to railway lines inland. A portable ramp held in place by a cable and pulley system bridged the gap from the mouth of the L.S.T. to the temporary tracks. Rails were laid to unload seven craft at a time.

After its opening, Cherbourg became the centre for discharge. L.S.Ts. capable of carrying only twenty 28-ft. goods vehicles and ten 150-h.p. diesel shunting locomotives were supplemented by larger vessels that could bring heavy equipment and hospital trains ashore. Three English and French-owned train ferries that formerly bore London-Paris passenger trains across the English Channel, two sea-trains that in peacetime carried rolling stock between American ports, and a ferry built for carrying awkward loads, joined the fleet. After the break-through in Normandy, the demand for additional rolling stock increased, and 24 more L.S.Ts. were converted and added to the original 30.

Plans for the ferrying programme were begun in 1942 when U.S.A. Transportation Corps officials decided that more locomotives and goods vehicles would be needed than were available in France. Detachments from railway units welded rails to the decks of the L.S.Ts. and made other changes necessary in the vessels

A V2 Train in Germany



A train loaded with V2 rockets which was captured intact by Allied troops

intended to participate in the ferrying programme. The U.S.A. battalions stationed in England prepared 1,500 locomotives for use and stored them in British railway depots. No fewer than 20,000 goods wagons were prefabricated in the United States, transported across the Atlantic, and assembled in England.

Belgian Diesel Railcar as Ambulance

Despite their relatively small carrying capacity, diesel railcar units have proved of considerable value on various war

grammes, were given in our *Diesel Railway Traction Supplement* of September 1, 1939, page 144, and further reference to the ambulance unit is made in the current (May) issue of that *Supplement*.

The Extent of Hungary

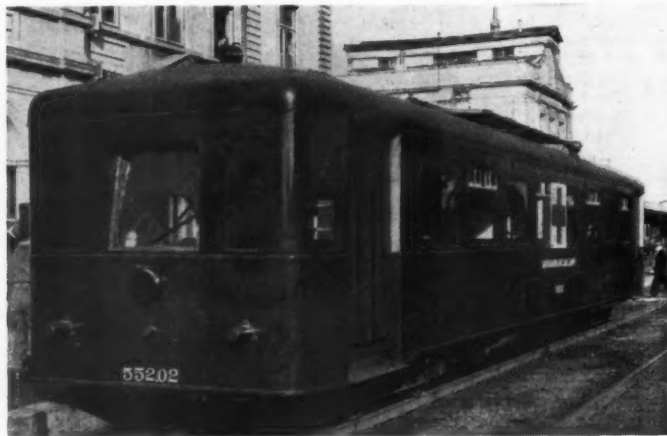
No country in Europe has varied more in size than Hungary during the past 30 years, and the comparison of any statistics relating to its railways is usually invalidated by the changes. Moreover, railway development has been hampered

miles and the population to 14½ millions. The armistice agreement with Hungary signed in Moscow on January 20 of the present year provided for the evacuation of all Hungarian troops and officials from the territories of Czechoslovakia, Roumania, and Yugoslavia as existing at the end of December, 1937—in other words reverting to the boundaries fixed by the Treaty of Trianon. The future of Hungary and of its railway system will depend upon the frontiers finally fixed at the Peace Settlement and, if these revert to anything like those which were fixed after the last war, this will result in a drastic reorganisation of the Hungarian railways to meet new traffic trends.

Canadian Diesel-Driven Armoured Train

Brief reference was made in our April 6 issue (page 350) to the armoured train built by the Canadian National Railways in the early part of the war. We are now able to supplement this with some further particulars, and an illustration of the locomotive, one of the best-known diesel engines in Canada, No. 9000 of the Canadian National Railways. It was completely remodelled in the Transcona (Manitoba) shops of the railway to furnish the power for this armoured train. These shops also converted four all-steel Canadian National flat wagons and three all-steel vans for this train, which was used in British Columbia until the Japanese invasion menace disappeared. The locomotive and wagons looked alike, which would have made it difficult for the enemy to pick out the engine in the event of an attack.

The May issue of our *Diesel Railway Traction Supplement* has now announced that early this year, diesel locomotive No. 9000 was released from military service and entered the C.N.R. shops at Point St. Charles to have its armour-plate removed and other changes effected to render it suitable for passenger service. All of the wagons were stripped of their war dress



British ambulance diesel railcar in Renaix Station, Belgium, during a trial run

fronts for the conveyance of wounded, mainly because of their rapid acceleration, low axle loads, and ability to be driven from either end without reversal. It may be recalled that, during the heavy fighting in Tunisia in April and May of 1943, the wounded were evacuated to rear bases by a number of converted and Red-Cross-embellished diesel railcars coupled in pairs, with a complement of some 90 wounded. After the fall of Tunis, these railcars maintained an ambulance link between Tunis and Souk-Ahras. Wounded were also brought from Sousse to Tunis by similar diesel trains over the narrow-gauge sections of the Tunisian Railways Company.

More recently on the Western Front, the ambulance railcar has made its appearance and is rendering good service. Our illustration shows British ambulance railcar No. 1 in Renaix Station. It was equipped for the medical services of the 21st Army Group, jointly by the Belgian National Railways, and the British Royal Engineers of the Railway Construction Company, and was given a trial run from Brussels to Renaix. This railcar is fitted for the accommodation of 27 stretchers in three tiers.

The vehicle appears to be one of half a dozen light 8-wheel all-metal bogie units placed in service by the Belgian National Railways in 1939, with 140-b.h.p. engines of the Brossel type. These vehicles originally had 80 wooden seats and room for a maximum of 40 standing passengers on a tare weight of 24 tonnes. The gross weight was 33-34 tonnes and the b.h.p. per tonne a little over 4. A four-speed gearbox was provided, and the top speed was 60 km.p.h. The Brossel engine incorporates a Ricardo Comet Mark III combustion chamber, and at 1,800 r.p.m. develops a maximum of 140 b.h.p. in six cylinders. Brief details of these railcars, and of the larger number of four-wheel units that formed part of the same pro-

gramme, were given in our *Diesel Railway Traction Supplement* of September 1, 1939, page 144, and further reference to the ambulance unit is made in the current (May) issue of that *Supplement*.

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C.N.R. armoured diesel locomotive for armoured train used in British Columbia during the Japanese invasion menace

duced to 8 millions. Upper Hungary was annexed from Czechoslovakia under the first German-Italian Vienna Award of November, 1938; and Ruthenia in March and April, 1939. Northern Transylvania was annexed from Roumania under the second German-Italian Vienna Award of August, 1940. The fourth addition was the area between the Rivers Danube and Tisza called Vojvodina, forming part of Yugoslavia, and incorporated by Hungary in April, 1941. These acquisitions brought the area of Hungary up to 66,310 square

and are now back in regular freight service. The C.N.R. pioneered the development of diesel power for railway service in Canada, when, in June, 1925, it introduced the first diesel-electric railcar. No. 9000, which was the first diesel locomotive in Canada, was introduced in 1928. This twin-unit locomotive was then the largest and most powerful of its kind in the world. When No. 9000 went into war service, only one unit was remodelled. Its 12-cylinder engine was replaced with a new V-type, two-stroke cycle, 16-cylinder engine.

Ministry of War Transport Accident Report

Wood Green, L.N.E.R., August 29, 1944

Lt.-Colonel E. Woodhouse inquired into the accident which occurred at about 5.30 p.m. on August 29, 1944, at Wood Green, L.N.E.R., when the 5.22 p.m. suburban train, Finsbury Park to Gordon Hill, consisting of 2 four-coach articulated sets drawn by 0-6-2 tank engine, class "N2," No. 2675, travelling on the No. 2 down slow line, left the rails about the far end of a left-hand curve of varying radius, 600 ft. long, which commences at the north end of the platform and forms the beginning of the Enfield branch. This branch is a prolongation of the No. 2 slow line and, rising, turns to the east and crosses over the main lines as a fly-over. There are scissors crossings between the two slow lines just north of the station and a connection from the down goods line to the No. 2 slow line, the trailing points of which are in rear of those of the scissor crossing leading from the No. 1 slow line, making three connections in 280 ft. Four passengers and the fireman were injured and the driver so badly scalded that he was 6 months under hospital treatment. He was trapped in his cab when his engine overturned to the left on the down goods line, at that point 4 ft. below the Enfield branch line. The weather was fine and clear. Colonel Woodhouse attributes the accident to excessive speed. (There is a permanent speed restriction of 15 m.p.h. through Wood Green Station on both down slow lines and through the junction between these lines and the down Enfield branch.) The train concerned is the only passenger train which runs to the branch without stopping at Wood Green, and the evidence of several witnesses went to show that its speed was considerably in excess of the permitted limit.

Careful inspection of the engine revealed no defects, such as broken springs, which might have contributed to the derailment and although the track was not in first class condition, due no doubt to wartime maintenance difficulties, Colonel Woodhouse does not regard this as a contributory factor; he finds that the permanent way was satisfactory for the relatively low speed imposed by the regulations and if they had been observed no accident would have happened.

The guard was travelling at the rear and it occurred to him, just before his van reached the platform, that his train was travelling too fast, and as he saw from the vacuum gauge that the brake had not been applied, he went to go to his van valve, but was thrown off his balance by a sudden lurch; the train then came to a stand after some bumping. He was unable to make an estimate of the speed but was sure it was greater than 15 m.p.h. and that the train was travelling faster than empty stock trains did at the point and on which he had at times done duty.

The driver said he was accustomed to driving the "N2" class of engine and frequently had worked trains to the Enfield branch not calling at Wood Green. He had worked the same train with the same engine the day before the accident; his previous turn of duty (with a different engine of the same class) was 5 weeks earlier. He ran at his customary speed from Finsbury Park, shutting off steam just after passing Wood Green No. 1 box

(at the London end of the station), his usual practice. He delayed re-opening the regulator for the rising fly-over gradient as he had felt, he said, a pronounced lurch the previous day, at or near the point where derailment took place. He next felt a severe lurch or bump, which suggested to him that the wheels had struck the entering end of a check rail and the engine "seemed to go up in the air"; he did not apply the brake until that moment. He thought his speed through the station and past the scissors crossing was about 25 m.p.h. and admitted frankly that he was unaware at the time of the 15 m.p.h. restriction. He regarded his speed as reasonable for either of the "straight" lines, but would have run more slowly if he had had to pass through a crossover. There was always, he said, some unsteadiness of running at this point, due to change in cant, but it had been worse than usual on the previous day. He had not reported the occurrence, however, and did not regard it as coming within the category of a really abnormal lurch due to faulty track. The fireman generally confirmed this evidence, and that given by other persons, together with a comparison of signal box timings, convinced Colonel Woodhouse that violation of the speed restriction was the cause of the accident.

His report accordingly places the responsibility on the driver, who gave his evidence in a most straightforward fashion and admitted that he was running at a speed considerably greater than that prescribed. Destruction of the track between the ends of the check rails on the left- and right-hand curves made it impossible to determine the exact point of derailment, but it is considered that the passage of the engine at unsuitably high speed through the three closely spaced connections, and the left-hand curve of irregular radius and varying cant, caused severe oscillation. This damaged and badly distorted the length of straight track (60 ft. long) between the curves, possibly causing the leading wheels to strike the entering end of the second check rail, as the driver suggested. It is remarkable that a man of his experience, with a very satisfactory record, should have been unaware of the 15 m.p.h. restriction. He is 41 and was promoted driver in 1937.

REMARKS

The need for the severe restriction arises, as far as the No. 2 slow line is concerned, from the irregular radius and lack of proper and uniform cant at the south end of the left-hand curve, but such conditions at the foot of a steep gradient leading to the bridge—1 in 49 to 1 in 40—are unfortunate. Drivers of heavy trains naturally tend to maintain speed over one of the "through" lines of the extended scissor crossing, to ensure that they do not stall on the gradient. Full length main-line empty coach trains to the sheds are worked over the branch, and—as a war measure—heavy freight trains. Colonel Woodhouse suggested adjusting the alignment and cant from No. 2 slow line to the branch to make more than 15 m.p.h. permissible, and so "favour" the line most frequently used, leaving the present restriction in force over the subsidiary connections, the alignment and levels of which would be worsened to

some extent. This improvement will be considered and will be welcomed by the Operating Department as tending to expedite the movement of heavy empty stock trains. The Assistant Engineer (London), Mr. T. H. Seaton, suggested removing the connection from No. 1 down slow line and this also will be considered. The present arrangement is rather awkward as it is governed by the distance available from the rise from beneath an overbridge at the north end of the station to the fly-over bridge and the alignment of the embankment leading thereto. By an Act of 1914, the powers conferred by which are still in force, the former Great Northern Railway was authorised to replace the fly-over by a line passing below the main lines, with 15- and 20-chain curves and relatively easy gradients (1 in 200 against traffic). Some improvement seems desirable now that the branch, which once terminated at Enfield, forms a main-line route alternative to that through Hatfield.

Birmingham Railway Carriage & Wagon Co. Ltd.

Presiding at the general meeting of the Birmingham Railway Carriage & Wagon Co. Ltd., Sir Bernard D. F. Docker, K.B.E., J.P., the Chairman, said that the work they had been called on to undertake during wartime had been in quite a different category from rolling stock and had required a new technique; consequently their plant and general layout had had to be radically changed. The reconversion for their normal production would be a costly process and in addition they had to make good arrears of repairs and maintenance of plant and buildings. These were some of the reasons for building up the war contingencies reserve.

Security regulations now permitted him to give some information on the company's activities during wartime, and he considered that they had good reason to be proud of the part played by the company and everybody connected with it. He could not yet reveal the whole story, because some of their work was still on the secret list. There had been two main items of production—heavy armoured fighting vehicles and gliders—but in addition they had produced main components for many well-known aircraft, such as the Blenheim, Lancaster and Halifax, hundreds of thousands of shells and bombs and also important structures for the Mulberry Harbour.

They were one of the largest producers of tanks, including among other types, Valentine, Churchill and Cromwell, and they had, in collaboration with the Ministry of Supply, covered a large field of experimental design and development work on these and other heavy armoured vehicles. They had patented and produced the prototype of the Cromwell tank and had also been responsible for the prototypes of a number of other fighting vehicles. The British tank had been criticised in some quarters but actions spoke louder than words and they knew those in command in the field had acclaimed their reliability and satisfactory performance.

In their carriage building section they started the manufacture of aircraft as far back as 1938, thus following the precedent set in the first world war when they

built and flew from their works some of the first two-engined bombers ever built. Their chief product on the present occasion had been the famous giant Hamilcar glider, capable of carrying a tank or similar heavy loads such as Bren-gun carriers and Daimler scout cars—it was noteworthy that they built both tanks and the aircraft which could carry them. They were the main contractors for the production of the Hamilcar, and all those gliders which took part with such conspicuous success on D-Day and subsequent airborne operations, including the crossing of the Rhine, had been turned out from their works. They had fully met all demands made upon them from time to

time for increased output, and although most of their resources were taken up with the production of tanks and aircraft, for both of which they still had substantial programmes to fulfil, they had made a start in a comparatively small way with the building of wagons for both home and overseas railways, and it was a welcome sight to see these once more occupying their shops.

There should be a brisk demand for rolling stock for some time to come. They had in the past had a substantial export trade all over the world, and they were taking such steps as control permitted to restore and expand that branch of their business. Competition in the past was

very keen, and he had no doubt it would be so in the future, and, therefore, he could not help feeling apprehensive of the continual rise in cost. They were told that if they were to maintain even the pre-war standard of living they must not only regain the whole of their overseas trade, but increase it by 50 per cent., and they were also told that industry was expected to achieve this difficult task. If it was to succeed it must not be burdened with restrictions and handicaps that competitors in other countries did not have to bear.

He was sure they would appreciate the co-operation which had taken place between the management and the employees.

Brush Electrical Engineering Co. Ltd.

The fifty-sixth general meeting of the Brush Electrical Engineering Co. Ltd. was held on May 1, at the registered office, Falcon Works, Loughborough, Sir Ronald W. Matthews, the Chairman of the company, presided.

The Chairman, in the course of his address, said that the directors regretted to report that Mr. Allan Miller, who had made so notable a contribution to the reconstruction of the business, had had, through pressure of other business, to resign from the Board.

Mr. F. Mitman and Mr. R. W. Richards had been elected to the Board.

The trading profit amounted to £242,576, against £261,839 last year and £214,336 for the previous year.

In the profit and loss account the increase in fixed assets and the fact that the directors last year established the precedent of depreciating buildings, plant and machinery, etc., on the basis of the wear and tear allowances as computed by the Inland Revenue, had resulted in a large debit under the heading of "depreciation."

The profit carried to the appropriation account was £147,257, against £175,002 the previous year. To this must be added £11,532 carried forward from the previous year. The directors recommended that the resultant amount of £158,789 should be dealt with as set out in the directors' report. The main appropriations were in respect of taxation, general reserve and provision for preference dividend for the half-year ended September 30, 1944, and the half-year ended March 31, 1945, ordinary stock interim dividend of 4 per cent. and provision for an ordinary stock dividend of 6 per cent., making 10 per cent. for the year. The actual provision for taxation for the year 1945-46 was assessed at £82,500, but as there was an over-provision in previous years of £32,500, the charge in the appropriation account was £50,000. The amount transferred to general reserve was £40,000, as against £25,654 for last year.

In the appropriation account they would also notice a provision of £2,500 in regard to the South African subsidiary. This referred to Brush (South Africa) (Proprietary) Limited, which company was registered and started trading in Johannesburg in January, 1944, and in which the company owned more than 50 per cent. of the issued capital.

The position as disclosed by the balance-sheet was a favourable one, as the total surplus of current and fixed assets over liabilities had again increased; the increase this year being £64,173.

During the year, Petters Limited, a wholly-owned subsidiary of the company, subscribed with certain other oil engine

companies, to the formation of British Oil Engines (Export) Limited, which organisation was formed to offer to the export market a comprehensive range of engines. As a result of its ability to offer a complete range, the new export organisation had already completed agency agreements abroad with firms of the highest standing in their respective markets.

In previous years restrictions had been imposed upon the disclosure of information in connection with the production of war supplies, but as these restrictions had now been removed to some extent, he could give a brief survey of the wide variety of products which the company had produced, and the valuable contribution which had been made to the war effort.

Practically the whole of the company's considerably increased wartime engine turnover had been taken by the Ministry of Aircraft Production and Ministry of Supply.

A separate department was set up at the beginning of the war to produce gun mountings for tanks. The whole of the resources of the coachwork division, which pre-war were employed in the production of public transport vehicles, had been concentrated on producing war supplies. For the Ministry of Supply vast quantities of general service vehicles, radiolocation cabins and associated equipment had been produced. An extensive department was set up in the first year of the war to repair complete aircraft fuselages and centre sections.

For the past two years a further extension to this division having been made with the assistance of the Ministry of Aircraft Production, complete wooden aircraft had been produced. These aircraft were used as wireless trainers, and arrangements were now being made for a quantity to be produced to designs which would enable them to be put to a variety of other uses in connection with the war effort.

While the company continued to manufacture products for the various Ministries, the directors had within the limits imposed upon them, taken active steps to see that during the transitional period from war to peace the dislocation of production would be reduced as far as possible.

In the post-war years there would be a heavy demand for the company's products, particularly for engines, public transport vehicles and power plant. During the war years the production of public transport vehicles had, of necessity, been very restricted. In consequence, there was a tremendous amount of leeway to be made up in the industry. The demands made on power plant installations during the wartime and their almost continuous use made it very necessary for a heavy replacement

programme to be undertaken at the earliest possible moment. The company would be in a position to make its valuable contribution towards this replacement programme. To these demands must be added those from export markets.

This year the company had extended its apprentice training programme to include girl student apprentices of school certificate standard who, on completion of their training, would be absorbed into the permanent staff of secretarial, costing and accountancy or technical work.

The scheme provided a three-year course to which the girls were indentured, as had been the practice for many years with youths entering the engineering industry.

During the year the foremen held their second annual conference. They were exceptionally fortunate in their speakers—Sir Frederick Leggett, C.B., Dr. Maurice Dobb, Mr. F. J. Burns Morton, Mr. L. H. Pearmaine, Dr. J. A. Bowie and Group Captain C. J. O'Malley, C.B.E.

This picture of the activities of the company during 1944 would be incomplete without a reference to the excellent relations which had existed throughout the company during the year, and a tribute to the admirable work of executives, staff and workpeople.

The report and accounts were adopted.

The retiring directors (Sir Richard Pease, Captain R. C. Petter, Mr. C. Hill, Mr. F. S. Mitman and Mr. R. W. Richards) were re-elected, and Messrs. Cooper Brothers & Company and Messrs. Lawrence Robson & Company having been reappointed joint auditors the proceedings terminated.

ALFRED HERBERT LIMITED.—Alfred Herbert Limited of Coventry states that it is prepared to supply machine tools for industrial re-equipment on hire-purchase terms, either direct or through established channels.

WROUGHT STEELS FOR GENERAL ENGINEERING.—The British Standards Institution has issued a further addendum for wrought steel for general engineering purposes for B.S. 970, with the reference No. P.D. 338. The addendum includes one or two corrections to EN 30, but the major feature is the incorporation of a new steel to which has been given the reference EN 320. This new steel is a 2 per cent. nickel, 2 per cent chromium case-hardening steel, with an ultimate tensile stress of 85 tons per sq. in. The material is, therefore, capable of meeting the test requirements of specification EN 39. Copies of the addendum are available on application to the offices of the B.S.I., 28, Victoria Street, London, S.W.1, gratis.

Guildford Railway Centenary

On Saturday last, May 5, the centenary of the first railway to Guildford was marked by the opening of a centenary exhibition at Guildford House by the Mayor of Guildford. The exhibition is to remain open until May 19; it contains a number of prints, photographs and other exhibits, including models of Southern Railway rolling stock. The opening ceremony was performed by the Mayor of Guildford, Councillor Wykeham Price, J.P., C.C. Those present at the opening included Colonel E. Gore Browne (Chairman of the Southern Railway Company), Sir Eustace Missenden (General Manager), Mr. R. M. T. Richards (Traffic Manager), and Mr. C. Grasemann (Public Relations & Advertising Officer).

At a luncheon given by the Mayor of Guildford at the Guildhall before the official opening of the exhibition, Councillor Wykeham Price, proposing the toast of the Southern Railway, with which he coupled the names of Colonel Gore Browne and Sir Eustace Missenden, referred to the fact that before the grouping of the railways Guildford had been served by regular passenger services of all three of the companies which formed the Southern Railway, namely, the London & South Western, the London Brighton & South Coast and South Eastern & Chatham. The first railway to come to Guildford was a branch from the Old London & Southampton Railway at Woking, and it was this section which had been opened one hundred years before. Guildford was one of the few stations in the country from which it was possible to go to London and to start the journey by proceeding in the opposite direction.

Colonel Gore Browne, replying to the toast, said that he and his family were linked with Guildford, for his father had been educated at Guildford Grammar School, and although he (Colonel Gore Browne) had been born in India, at an early age he had come to live in the

London Road, Guildford. His sister still had a house in the borough. The Guildford to Woking Line, which had come into being one hundred years ago, was an outstanding example of the initiative and success of private enterprise. He contrasted the railway service enjoyed by Guildford a century back with that of the present day. Then it had been served by seven trains a day, and the journey to London took 77 minutes. Now the Southern Railway gave the people of Guildford 40 trains a day; the travelling times were from 41 to 58 minutes for the journey, and the average time was 51.3 minutes. He knew that he spoke for the Southern Railway as a whole when he said that they were quite prepared to face competition in the post-war world if they were given the right to compete with all other forms of transport on fair and equal terms. He agreed with the proposition that public services must be accepted as a qualification for private enterprise, and on this basis he felt sure that the Southern Railway, as an undertaking owned and managed by private enterprise, would not be found wanting.

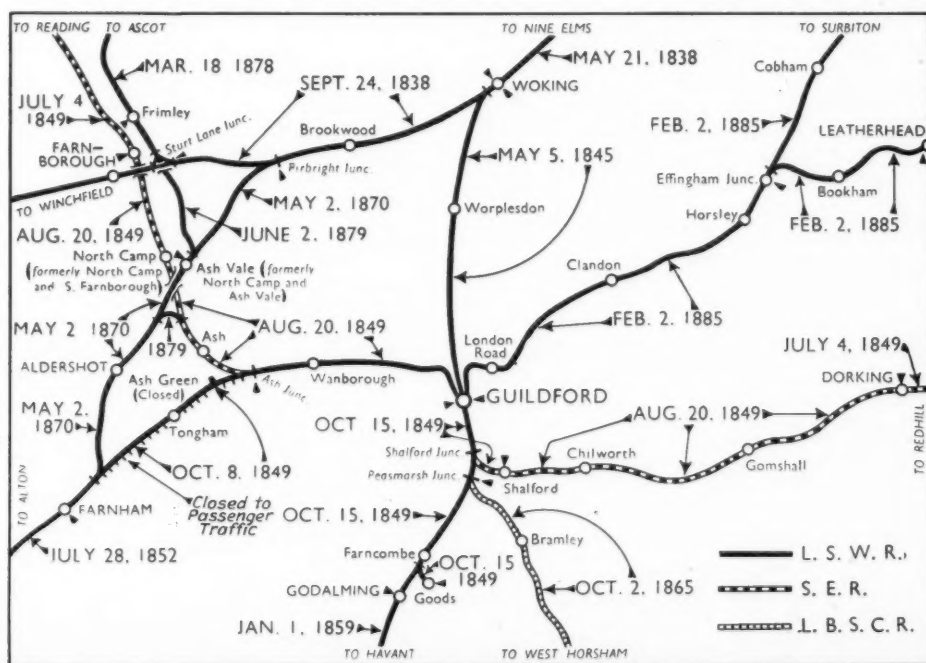
Sir Eustace Missenden thanked the Mayor for entertaining the Southern Railway representatives, and explained some of the difficulties which had been overcome in moving the troops who returned from Dunkirk, many of whom had come through Guildford. He had received a message from Major Napier at the War Office, saying "Fear only 20,000." That was the number which it was expected could be saved from the beaches at Dunkirk. In fact the numbers which had been brought back, practically all of whom had passed over Southern Railway metals, had been about 367,000. It had been necessary to organise 185 trains, which had been stabled on the old Chatham & Dover line and sent down to Dover on that line. They had been brought back by the old South-Eastern line, and

the fact of having these two lines available had greatly helped the operation.

He hoped that the people of Guildford would be patient with the Southern Railway when they saw their carriages becoming worn and untidy. These and other matters would be put right when men and materials became available. Guildford Station, too, could be improved. He thought, also, that it would be a good thing if better facilities were provided for the exchange of road and rail passengers at Guildford Station, and he suggested that the people of Guildford, the railway, and road operators, might get together to make arrangements to this end.

LIFE PASSES FOR AUSTRALIAN V.C. WINNERS.—By arrangement between the State and Commonwealth Governments it has been agreed that each State and the Commonwealth of Australia shall issue to residents within their own territories, who are holders of the Victoria Cross, life passes on the railways of Australia, such passes to include reserved seats and sleeping berths. A charge for the passes will be raised by the Railway Administration in the territory in which the V.C. winner resides, against its own Government, and such charge will be retained by that railway system. There are at present resident in Western Australia five V.C. winners of the 1914-18 war, and there are two surviving Western Australian V.C. winners of the present war, both of whom are still serving with the Forces.

RHAETIAN RAILWAY IMPROVEMENTS.—Three rectifier stations of 800 kW each, involving an expenditure of 320,000 francs, are being installed on the 16-mile metre-gauge line Chur-Arosa. In addition, 800,000 francs are to be expended for the reconstruction of four motor coaches of the former Bernina railway, on a part of the Rhaetian system. The rating of these coaches is to be increased from 300 to 600 h.p. and they are to operate on the Arosa line during the winter season.



Map showing the Guildford district and the dates of opening of the railways in the vicinity of the town

Notes and News

Murex Limited.—It is announced that Murex Limited has declared an interim dividend of 7½ per cent., less tax, on the ordinary stock, payable on May 19 to holders registered April 20. The dividend is on account of the year ending June 30, 1945.

John Thompson Engineering Co. Ltd.—The final dividend on the ordinary shares of the John Thompson Engineering Co. Ltd. is at the rate of 12½ per cent., plus a bonus of 5 per cent., making 22½ per cent. (all same) for the year ended December 31, 1944.

John Summers & Sons Ltd.—The net profit of John Summers & Sons Ltd., for the year ended December 31, 1944, after provision for taxation, was £497,660 (£503,863). The dividend on the "A" ordinary stock was at 8½ per cent. (same) and on the "B" ordinary stock at 4½ per cent. (same).

United Steel Companies Limited.—It is announced that arrangements have been made between the United Steel Companies Limited and the Ministry of Supply for the purchase by the former of the Chapel Bank Works, at Workington, Cumberland. It is proposed to build a machine foundry for the production of ingot moulds and castings.

Proposed Ropeway in Switzerland.—A committee was formed recently at Andermatt, Switzerland, with a view to promoting the building of a ropeway to lead from a lower terminus, at an altitude of rather over 4,000 ft., at Andermatt to the Gurschenalp group to the west (the main peak of which, the Dammastock, is some 11,800 ft. high.)

Superheater Co. Ltd.—The net profit of the Superheater Co. Ltd. for the year ended December 31, 1944, was £128,031 (£111,605), including interest on investments £6,987 (nil). The final ordinary dividend was at the rate of 27½ per cent. (25 per cent.), making 40 per cent. (37½ per cent.) for the year. The amount carried forward was £18,930 (£17,828).

City of Oxford Motor Services Limited.—Traffic and other receipts, for 1944, of the City of Oxford Motor Services Limited, which is associated with the Great Western Railway Company and the British Electric Traction Co. Ltd., amounted to £314,731 (£294,410) after providing for operating expenses. Interest and dividends on investments amounted to £4,271 (£4,216). The profit for the year, after provision for taxation and depreciation, was £16,581 (£18,726). The amount brought in was £7,770 (£7,414). The 6½ per cent. preference dividend absorbed £4,810 (same). The total ordinary dividend was at 6 per cent., tax free, for the year, leaving £8,386 carried forward.

Sharpness Docks & Gloucester & Birmingham Navigation Company.—The report for the year 1944 shows that the annual amount of compensation payable by the Government under the Canals Control Order, 1942, was agreed last September at £62,250, to which are added £21,039 balances in respect of previous control periods, making a total of £83,289. After payment of debenture interest (£22,219), £27,500 for taxation, £6,279 for War Damage Contributions & Reserve, £10,786 to works and contingencies reserve, and other items amounting to £5,430, there remains sufficient to pay one year's dividend of 5 per cent. (less tax) on the cumu-

lative preference stock "A," and a dividend of 5½ per cent. (less tax) on the preference stock "B." The tonnages of imports and exports in 1944 were respectively 776,011 and 162,161, against 948,213 and 56,147 respectively in 1943.

Agreed Charges.—Applications have been made to the Railway Rates Tribunal for the approval of 65 further agreed charges under the provisions of Section 37 of the Road & Rail Traffic Act, 1933. Notices of objection should be filed by May 23.

Brush Electrical Engineering Co. Ltd.—The trading profit of the Brush Electrical Engineering Co. Ltd., which is controlled by the Associated British Engineering Limited, for the year ended December 31, 1944, was £242,576 (£261,839). The final ordinary dividend was at 6 per cent., making 10 per cent. (9 per cent.) for the year. The amount carried forward was £11,560 (£11,532).

Taylor Woodrow Limited.—The profit of Taylor Woodrow Limited, for the year ended October 31, 1944, after deducting expenses and depreciation, but before providing for taxation, amounted to £116,679 (£93,836). The amount carried forward was £39,621 (£39,504). The final ordinary dividend was at the rate of 17½ per cent. (12½ per cent.), making 20 per cent. (15 per cent.) for the year.

Coventry Machine Tool Works Limited.—The trading profit of the Coventry Machine Tool Works Limited for the year ended December 31, 1944, was £24,082 (£23,744). The dividend for the year was at 8 per cent. (same). The amount carried forward was £11,163 (£8,556). Since the closing of the accounts the company has acquired the whole of the share capital of John Stirk & Sons Ltd., of Halifax, from the Ministry of Supply.

Trans-Zambesia Railway Co. Ltd.—By a special resolution passed at an extraordinary general meeting of the Trans-Zambesia Railway Co. Ltd., held on December 31, 1944, it was resolved that the memorandum of association be altered so as to permit of the reconstitution of the company's board of directors. The petition for confirmation of this proposed alteration is directed to be heard before Mr. Justice Cohen on Monday, May 14, 1945.

Canadian National Railways.—Gross earnings of the Canadian National Railways for the month of March, 1945, amounted to \$37,046,000, a decrease of \$812,000 in comparison with March, 1944. There was a reduction of \$420,000 in operating expenses, and the net earnings of \$7,728,000 were lower by \$392,000. Aggregate gross earnings for the first three months of 1945 were \$100,843,000, or \$3,985,000 less than for the first quarter of 1944, and the net earnings of \$14,678,000 showed a decrease of \$4,014,000.

North British Locomotive Co. Ltd.—A dividend of 5 per cent. for 1944 on its ordinary stock has been declared by the North British Locomotive Co. Ltd., the same as for 1943. Net profit for 1944 is £42,343, after provision of £150,000 for taxation and an appropriation of £50,000 for reserve. The amount carried forward is £51,380. In 1943 the net profit was £58,891 after £30,000 to depreciation, £120,000 to taxation, and £25,000 to reserve. £59,037 was carried forward.

London Transport Unofficial Strike.—In a statement issued by Lord Ashfield during the recent unofficial strike of certain bus, tram, and trolleybus services of the

London Passenger Transport Board, he stressed that under the difficult conditions prevailing it was inevitable that the passenger loadings should be greater than in peacetime. The Board expressed appreciation of the efforts of its staff in carrying out its duties under wartime restrictions. It was stated that, with the assistance of the Government Departments concerned, a sufficient supply of labour had been secured to cover the summer schedules. Normal services were resumed on May 7.

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices	
			May 4, 1945	Rise/Fall
G.W.R.				
Cons. Ord. ...	62½	55	56	— 1
5% Con. Pref. ...	122½	114½	121½	— 1
5% Red. Pref. (1950) ...	110½	104	105	—
5% Rt. Charge ...	135½	128	134½	—
5% Cons. Guar. ...	134½	125	134½	—
4% Deb. ...	118½	112½	117	—
4½% Deb. ...	118½	114	118½	—
4½% Deb. ...	124½	119½	122½	—
5% Deb. ...	137	129½	136½	—
2½% Deb. ...	77	73½	76½	—
L.M.S.R.				
Ord. ...	34½	27½	28	—
4% Pref. (1923) ...	64½	55½	57½	— 1
4% Pref. ...	81	72½	78½	—
5% Red. Pref. (1955) ...	105½	102	105½	—
4% Guar. ...	107½	99½	103½	—
4% Deb. ...	111½	104	109½	—
5% Red. Deb. (1952) ...	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10½	7½	6½	—
Def. Ord. ...	5½	3½	3½	—
4% First Pref. ...	68½	55½	56	— 1
4% Second Pref. ...	35½	28½	28½	— 1
5% Red. Pref. (1955) ...	102½	97½	102	—
4% First Guar. ...	105½	96½	102½	—
4% Second Guar. ...	95½	88½	96	—
3% Deb. ...	88½	80½	87½	—
4% Deb. ...	110½	103½	109	—
5% Red. Deb. (1947) ...	105½	101½	101½	—
4½% Sinking Fund Red. Deb. ...	107	104½	105½	—
SOUTHERN				
Pref. Ord. ...	80½	71½	75	— 1
Def. Ord. ...	26½	23	23½	—
5% Pref. ...	122	113½	121½	— 1
5% Red. Pref. (1964) ...	117½	112½	115½	—
5% Guar. Pref. ...	134	125½	134½	—
5% Red. Guar. Pref. (1957) ...	115½	112½	115½	—
4% Deb. ...	118	110	116	—
5% Deb. ...	135½	127	135	—
4% Red. Deb. (1962-67) ...	111½	107½	110½	—
4% Red. Deb. (1970-80) ...	112	108½	112½	—
FORTH BRIDGE				
4% Deb. ...	107	103	105	—
4% Guar. ...	106½	102	105	—
L.P.T.B.				
4½% "A" ...	125	119	123½	—
5% "A" ...	133½	128	133½	—
3% Guar. (1967-72) ...	99½	98	99	—
5% "B" ...	124½	118½	124½	—
5% "C" ...	72½	64½	66½	+ 1
MERSEY				
Ord. ...	35½	33	34½	—
3% Perp. Pref. ...	72	66	71	—
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND*				
BELFAST & C.D.				
Ord. ...	9	6	6½	—
G. NORTHERN				
Ord. ...	33½	19	27	+ 1
Pref. ...	49	37	43½	—
Guar. ...	70	57½	70	—
Deb. ...	90½	81½	91½	—
IRISH TRANSPORT				
Common ...	—	—	73	+ 1
3% Deb. ...	—	—	99½	—

* Latest available quotation

OFFICIAL NOTICES

MANAGEMENT CONSULTANTS have a vacancy on their permanent staff which offers excellent prospects of advancement in addition to high salary. Applicants, with Public School and University education, and who have held senior executive positions in industry, should state their age and give a record of education and positions held, including dates and salaries, to Box No. 75, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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Derwent Valley Light Railway Company.—The report and accounts of the Derwent Valley Light Railway Company for the year 1944 are in their full statutory form, by Order of the Minister of War Transport. Net revenue for the year amounted to £6,873, and after adding the balance brought forward and deducting fixed charges, the sum of £6,605 is available. The directors recommend that £1,000 be appropriated to general reserve, and that dividends at the rate of 5 per cent. on the preference shares, and 5 per cent. on the ordinary shares, be paid, which will absorb £4,050, leaving £1,555 to be carried forward. The volume of goods traffic conveyed was 136,258 tons, producing £33,956. Train miles were 11,141. Net receipts from railway traffic and from collection and delivery of parcels and goods were £5,849. Route miles open were 16 miles.

Road Accidents in March, 1945.—The return issued by the Ministry of War Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of March last shows 396 deaths (compared with 522 in March, 1944), 2,168 seriously injured (compared with 2,636 in March, 1944), and 6,554 slightly injured (compared with 7,151 in March, 1944).

Metropolitan-Cammell Patents Application.—Letters patent, bearing date October 11, 1926, granted to Metropolitan Cammell Carriage & Wagon Co. Ltd. for the invention of "Improvements in or relating to Railway and Tramway Vehicles," were regrantd on October 11, 1942. An originating summons on behalf of the Metropolitan Cammell Carriage & Wagon Co. Ltd. asking that the terms of the regrantd patent of 1942 may be extended for a further period of three years will on June 19, 1945, come before Mr. Justice Uthwatt for directions as to the hearing. Any notice of opposition must be lodged at least eleven days before June 19.

East Indian Railway Annuities.—Notice is given that on March 31, 1945, in accordance with the provisions of the East Indian Railway Company Purchase Act of 1879, a total sum of £9,134,375 was invested for the purpose of providing a sinking fund in respect of Annuities Class "B"; and under the East Indian Railway Company Sinking Fund Act of 1892, the total sinking fund investments for Annuities Class "C" and for Annuities Class "D" were respectively £2,063,468 and £3,921,615.

Exports of Small Precision Tools.—A new organisation, under the title British Engineers Small Tools & Equipment Co. Ltd. has been formed to develop the export sales of Brooke Tool Manufacturing Co. Ltd., Coventry Gauge & Tool Co. Ltd., A. A. Jones & Shipman Limited, F. Pratt & Co. Ltd., Taylor, Taylor & Hobson Limited, and E. R. Watts & Son Limited. The company will supplement existing export and agency arrangements, and overseas agents of the firms concerned will have the assistance of the new organisation. The first Chairman of the company is Mr. H. H. Harley, C.B.E., who is the founder, Chairman & Managing Director of the

Coventry Gauge & Tool Co. Ltd. Mr. H. P. Potts, M.I.Mech.E., Director of A. A. Jones & Shipman Limited, is Vice-Chairman. The offices of Chairman and Vice-Chairman will be held by annual rotation amongst the member companies. The board of directors also includes Mr. H. S. Holden, Managing Director of Brooke Tool Manufacturing Co. Ltd., Mr. K. G. Pratt, Director of F. Pratt & Co. Ltd., Mr. D. R. Stanley, Director of E. R. Watts & Son Ltd., and Mr. Mark H. Taylor, Managing Director of Taylor, Taylor & Hobson Limited. Offices are at Buckingham House, Buckingham Street, Adelphi, London.

Prevention of Corrosion and Corrosion-Fatigue.—A general meeting will be held by the Institution of Locomotive Engineers, at the hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, on May 17, at 5.30 p.m., when a paper will be read on "Prevention of Corrosion and Corrosion-Fatigue," by Mr. T. Henry Turner, M.Sc., Member.

A "V" DAY MESSAGE FROM THE CHAIRMAN TO THE STAFF OF THE L.N.E.R.

By the grace of Almighty God, the forces of Freedom have triumphed, and the torch of Liberty shines once more over the towns and villages of tortured Europe. For five and a half long years we have wrestled with Evil incarnate. There was a time when for a full year the people of the British Commonwealth fought alone, sustained by the knowledge of a righteous cause and by the inspiring leadership of our great Prime Minister.

We have a right to be proud as we look back over the years of struggle, and the hearts of all of us are full of gratitude to those gallant men and women who have made the supreme sacrifice for this dear country of ours.

It is right that we should rejoice, but in our rejoicings let us not forget the shadows that lie over so many homes, the starving millions of Europe, the grave responsibilities of the future.

You, men and women in the service of this great Company, may look back on your war record with pride and satisfaction. You have done a grand job. You have never let the fighting men down. You have fed the people. You have rescued the children. Day and night unceasingly, in all conditions, the work of the Railways has gone on. Well done, all of you.

RONALD W. MATTHEWS

May, 1945

The above message is reproduced from the current issue of the "London & North Eastern Magazine"

Road and Rail Transport.—Lord Leathers, Minister of War Transport, recently informed the Council of the National Road Transport Federation that, before formulating plans for post-war transport, he wished to have the considered views of the Federation and of the railways. He said that no plan could be accepted which failed to put the country's interests first. An efficient railway system was vital to the country, but a plan which merely solved the road-rail problem by levelling up road transport rates to railway rates could not be accepted.

The Colonial Service.—As from May 1, 1945, the Colonial Office will conduct arrangements for the appointment to the Colonial Service of engineers who are normally required to possess academic or professional qualifications, and also of

qualified architects and town planners. Such arrangements were formerly undertaken by the Crown Agents for the Colonies, 4, Millbank, S.W.1. Information regarding appointments of this nature will in future be obtainable from the Director of Recruitment (Colonial Service), 15, Victoria Street, S.W.1.

Manufacturing Ball Bearings.—Mr. C. E. Marshall, Service Engineer of the Fischer Bearings Co. Ltd., gave a lecture on ball-bearing manufacture recently at the Hillington, Glasgow, works of Rolls-Royce Limited. The lecture was illustrated with lantern slides and dealt with the processes of manufacture of the steel balls, the production of the ring components, and the assembly of the complete bearings.

Hoffmann Manufacturing Co. Ltd.—It is announced that the Hoffmann Manufacturing Co. Ltd., with certain textile machinery makers, has founded a new company—Hoffmann Tweedales—to manufacture ball bearings and textile machines. The new concern is a private company with a nominal capital of £400,000.

G. H. Sheffield & Co. (Engineers) Ltd.—Letters patent granted to G. H. Sheffield & Co. Ltd. for "Improvements in the construction of bogie trucks for railway and like vehicles" on June 30, 1925, and May, 1926, respectively, were regrantd on June 30, 1941 (No. 258,941), June 30, 1941 (No. 259,021), and May 4, 1942 (No. 261,987), respectively. An originating summons has been issued on behalf of G. H. Sheffield & Co. (Engineers) Ltd. and Metropolitan Cammell Carriage & Wagon Co. Ltd. asking that the terms of these regrantd patents may be extended for further periods of one year and ten months, one year and ten months, and two years and eight months respectively. This summons will come before Mr. Justice Uthwatt on June 12, 1945, for directions as to the hearing. Notices of opposition must be lodged at least eleven days before June 12.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Turton Bros. & Matthews Ltd.: Springs.
Steel, Peech & Tozer Branch of The United Steel Cos. Ltd.: Carriage tyres.
Gwynnes Pumps Limited: Engine spares.
Guest, Keen & Nettlefolds Limited: Brass nuts, washers and screws.
P. & W. Maclellan Limited: Mild steel.
General Electric Co. Ltd.: Soldering iron.
Standard Telephone & Cables Limited: Cap lamp switchboard.
National Gas & Oil Engine Co. Ltd.: Liners.
Imperial Chemical Industries Limited: Spare parts.
Morgan Crucible Co. Ltd.: Refactory lining.
Clyde Crane & Engineering Company: C.S. bevel wheels.
Greenwood & Batley Limited: Pressure gauge.
Ruston & Hornsby Limited: Steel spindle inlet valves.
Marconi's Wireless Telegraph Co. Ltd.: Transmitters.
H. J. Skelton & Co. Ltd.: Mild steel.
Buck & Hickman Limited: Steel turned wire.
Renolds & Coventry Chain Limited: Chains.
Boulton & Paul Limited: Wire netting.

Railway Stock Market

With attention centred on the dramatic events in Europe, business in stock markets further contracted; British Funds moved lower and industrial shares also receded in the absence of improvement in demand. Declines on balance were again moderate, however, and confidence in post-war prospects was indicated by the small amount of selling in evidence. There was a little speculative interest in European and Japanese bonds, and Argentine rails have been inclined to harden.

With Stock Exchange business on a moderate scale it could hardly be expected that home rails would be otherwise than dull. In fact, prices record further small declines on balance, but as in other sections of markets, this was attributed mainly to the small demand in evidence. Prior charges again eased, reflecting the trend in gilt-edged stocks. There have been no new developments enabling the home railway to be more clearly assessed; but there is a growing disposition to expect that the post-war policy of the Government in regard to transport and other important matters will be clearly set forth before long, assuming that talk of a General Election in the summer is borne out.

The tendency in the stock markets is to attempt to discount the future a long way ahead, and many industrial shares favoured on post-war hopes are already valued on a basis which discounts prospects of either higher dividends or a return to pre-war dividend levels. Shares

of leading stores companies are a case in point, also those of furniture concerns, leading motor car manufacturers, and those of many other concerns. Home railway stocks provide a striking contrast, the high yield basis reflecting the difficulty of assessing the outlook, which will turn on many uncertain factors, chief of which is Government policy and the shape of things to come in regard to transport organisation and control generally. Junior stocks, well below last year's highest, are in fact, around the lowest levels recorded last year. Great Western ordinary, now 56½, had extremes last year of 62½ and 55. In the case of L.M.S.R. ordinary they were 34½ and 27½; the latter also was the current price of this stock. L.N.E.R. second preference, now 28½, is also at the lowest recorded last year; last year's highest was 35½. Southern deferred (23½) had extremes in 1944 of 26½ and 23. London Transport "C" at 65½ is also not far short of last year's lowest; the extremes in this case were 72½ and 64½. These are grounds for the belief that the stock market is taking an altogether too gloomy view of the railway outlook, and we may see better levels reached in time, although a good deal will depend on the result of the General Election.

As in the case of security values generally, home railway stocks are substantially above the low levels touched in the early days of the war, when there had been a heavy scaling down of values. Towards the close of 1939, Great Western ordinary was no better than 21½, L.M.S.R.

ordinary 10, L.N.E.R. second preference as low as 9½ and Southern deferred only 7½. At the same period, 3½ per cent. War Loan was 86, comparing with the current level of 103½. Imperial Chemical (now 40s. 3d.) were then 24s. 10½d. Courtaulds (now 56s. 10½d.) were 22s. 10½d. P. & O. deferred have risen during the same period from 16s. 6d. to 44s. and Cunard ordinary units, which touched 1s. 7½d. in 1939, are now 24s. 6d.

Argentine rails are, of course, also above the 1939 low levels, particularly the debenture stocks. Buenos Ayres Great Southern ordinary, then 4½, is now 11½, and during the same period the 5 per cent. preference improved from 16½ to 27½, the 6 per cent. preference from 13 to 20½ and the 4 per cent. debentures from 46 to 64. Buenos Ayres & Pacific debentures have risen substantially during the same period, the 4 per cent. from 54 to 76, and the 4½ per cent. consolidates from 25 to 57½.

Buenos Ayres Western ordinary has improved since September, 1939, from 4 to 10½, the 4½ per cent. preference from 15½ to 25½ and the 4 per cent. debentures from 37½ to 58. Since then Central Argentine 4 per cent. debentures have risen from 46½ to 58 and the 5 per cent. from 49 to 67. San Paulo ordinary, around 20 when the war commenced, is now 54. Canadian Pacifics are materially higher at 16, contrasting with 3½ at one time in 1939, while the 4 per cent. non-cumulative preference stock, then 17½, has now risen to 66½.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or Stock	Prices						
			Total this year	Inc. or dec. compared with 1942/3		Totals		Increase or decrease		Highest 1944	Lowest 1944	May 4, 1945	Yield % (See Note)			
						1943/4	1942/3									
South & Central America	Antofagasta (Chili) & Bolivia	834	29.4.45	£ 3,530	+	£ 3,370	17	517,650	480,880	+	36,770	Ord. Stk.	13½	9½	11	Nil
	Argentine North Eastern	753	28.4.45	16,318	—	1,075	43	798,306	657,950	+	140,356	6 p.c. Deb.	18½	7½	7½	Nil
	Bolivar	174	Mar., 1945	5,430	—	576	12	16,068	15,953	+	115	Bonds	19½	15	22	Nil
	Brazil	...	...	...	...	...	...	...	...	...	...	Ord. Stk.	7½	34	52	Nil
	Buenos Ayres & Pacific	2,773	28.4.45	149,375	+	14,687	43	5,895,875	4,872,250	+	1,023,625	Ord. Stk.	14½	9½	11½	Nil
	Buenos Ayres Great Southern	5,080	28.4.45	210,875	+	36,500	43	9,067,500	8,167,875	+	899,625	Ord. Stk.	17½	9½	10½	Nil
	Buenos Ayres Western	1,924	28.4.45	67,937	+	812	43	3,051,188	2,570,937	+	480,251	"	13½	9½	10½	Nil
	Central Argentine	3,700	28.4.45	175,328	—	17,891	43	7,786,715	6,924,387	+	862,328	"	10½	6½	8½	Nil
	Do.	...	...	...	...	...	...	...	...	...	...	Dd.	44	3	41	Nil
	Cent. Uruguay of M. Video	972	21.4.45	36,740	+	3,986	42	1,434,380	1,442,887	—	8,507	Ord. Stk.	5½	4	5½	Nil
	Costa Rica	262	Mar., 1945	30,802	+	6,701	38	203,304	199,765	+	3,539	Stk.	17½	14½	16	Nil
	Dorada	70	Mar., 1945	24,100	—	1,489	12	82,705	73,281	+	9,424	1 Mt. Deb.	101	101	98½	£61/10
	Entre Rios	808	28.4.45	22,693	+	3,081	43	1,064,918	893,262	+	171,656	Ord. Stk.	64	4½	5½	Nil
	Great Western of Brazil	1,030	28.4.45	25,300	+	3,700	17	456,800	396,600	+	60,200	Ord. Sh.	38/-	23/3	28/9	Nil
	International of Cl. Amer.	794	Mar., 1945	\$192,246	—	\$82,950	12	\$577,793	\$757,635	—	\$179,842	1st Pref.	1½	1	1	Nil
	Interoceanic of Mexico	...	...	...	...	...	...	...	...	...	...	5 p.c. Deb.	88	79	78½	£67/5
	La Guaira & Caracas	22½	Apr., 1945	6,506	—	984	16	22,416	29,446	—	7,030	Ord. Stk.	5½	4½	4	Nil
	Leopoldina	1,918	28.4.45	42,509	—	9,284	17	766,610	775,742	—	9,132	Ord. Stk.	5½	4½	4	Nil
	Mexican	483	30.4.45	ps. 850,400	+	ps. 289,900	17	ps. 10,411,300	ps. 7,189,000	+	ps. 3,222,300	Ord. Stk.	5½	4½	4	Nil
	Midland Uruguay	319	Mar., 1945	16,993	+	1,573	38	155,974	155,768	+	206	Ord. Stk.	5½	4½	4	Nil
	Nitrate	382	30.4.45	14,344	+	5,781	17	58,757	70,115	+	11,358	Ord. Sh.	75/10	65/10	73/9	£37/10
	Paraguay Central	274	27.4.45	£65,034	+	£8,085	43	£2,577,276	£2,230,148	+	£347,128	Pr. Li. Stk.	79½	68	78½	£712/10
	Peruvian Corporation	1,059	Apr., 1945	126,043	+	4,934	43	1,296,522	1,085,795	+	210,727	Pref.	9	10	9½	Nil
	Salvador	100	Feb., 1945	206,000	+	18,000	34	c 957,000	c 984,000	—	c 27,000	Ord. Stk.	57½	46	54½	£313/5
	San Paulo	153½	Mar., 1945	3,325	—	1,420	38	23,370	50,015	—	26,645	Ord. Sh.	21/3	13/9	12/6	Nil
	Talca	...	...	...	...	...	...	...	...	...	...	Ord. Stk.	4	2½	2½	Nil
	United of Havana	1,301	28.4.45	56,314	—	31,286	43	2,354,392	2,498,819	—	144,427	Ord. Stk.	4	2½	2½	Nil
Uruguay Northern	73	Mar., 1945	1,856	+	106	38	14,313	13,265	+	1,048						
Canada	Canadian Pacific	17,028	30.4.45	1,742,600	+	187,000	17	20,006,500	20,120,200	—	113,800	Ord. Stk.	17½	13½	16	£6 8/8
India	Barai Light	202	Feb., 1945	20,220	—	4,467	44	243,080	237,600	+	5,480	Ord. Stk.	129½	97½	128½	£310/1
Various	Egyptian Delta	607	31.3.45	20,034	—	960	51	705,057	624,658	+	80,399	Pr. Sh.	7½	5½	6½	Nil
	Manila	...	...	...	...	...	...	...	...	...	B. Deb.	63½	58	61½	Nil	
	Midland of W. Australia	277	Mar., 1945	17,935	—	7,095	39	173,275	270,532	—	97,257	Inc. Deb.	101½	99½	96½	£42/11
	Nigeria	1,900	27.1.45	395,318	—	30,784	13									
	South Africa	13,301	31.3.45	1,006,202	+	103,521	52	48,936,105	43,996,851	+	4,939,354					
	Victoria	4,774	Nov., 1944	1,307,642	—	35,856										

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffic is given in sterling calculated @ 16 pesos to the £.

† Receipts are calculated @ 1s. 6d. to the rupee